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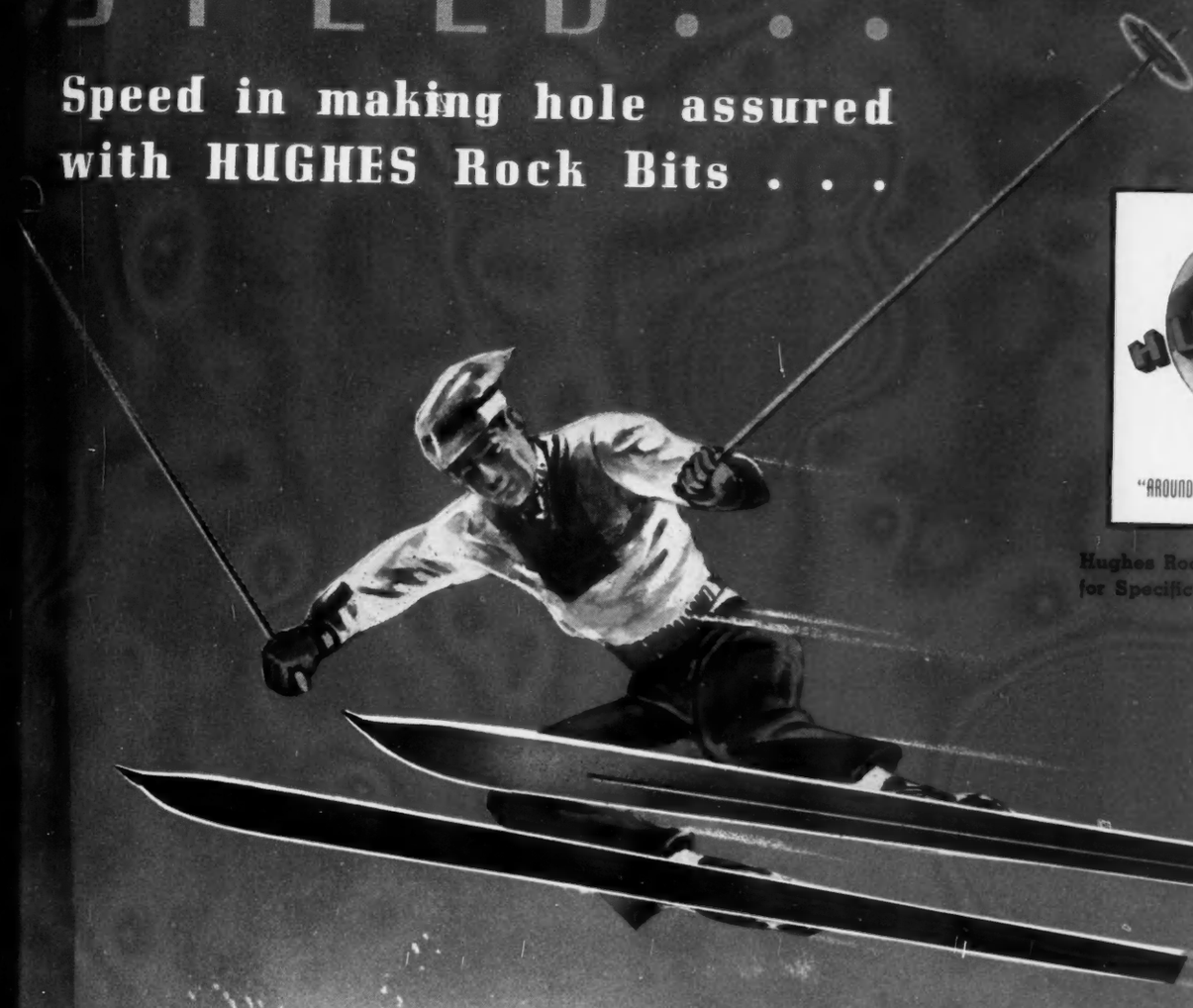

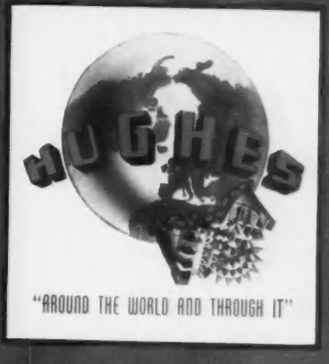

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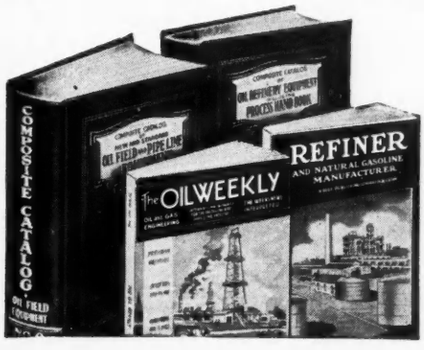

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The Oil Man's Calendar

DEC. 14–15	Interstate Oil Compact Commission, Fort Worth, Texas.
21	California Oil & Gas Association, Annual Banquet, Los Angeles.
MAR. 22–24	American Association of Petroleum Geologists, Oklahoma City, Okla.
APR. 3–7	American Chemical Society, Baltimore, Maryland.
13–14	National Petroleum Association, Cleveland, Ohio.
24–29	Oil-World Exposition, Houston, Texas.
MAY 3–5	Petroleum Electric Supply Association, Houston, Texas.
3–5	Petroleum Industry Electrical Association, Houston, Texas.
JUNE 15–16	Pennsylvania Grade Crude Oil Association, Hershey, Pa.

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This Week's Panorama

THE crude oil markets remain somewhat unsettled, despite current moderate crude production and refinery runs.

This was evidenced last week when an independent refining concern, Ben Franklin Refining Company, reduced purchases 20 percent and lowered its crude price postings 8 to 12 cents a barrel in the Healdton and Hewitt fields of southern Oklahoma.

Market weakness was displayed also earlier in the week when two major purchasers abandoned gravity scale postings on light crudes, between 40 and 45 gravity, in several districts of Texas, after other purchasers had declined to adopt those higher prices. Through this action, the two companies cut all the crudes between 40 and 45 gravity down to the prices commonly posted for "40 gravity and above." The cut ranged from 2 cents a barrel for 41-41.9 gravity to 10 cents on 45 gravity and above, and affected fields of North and West Central Texas, the Texas Panhandle, the Gulf Coast, and Southwest Texas. The two purchasers that had sought unsuccessfully to establish the higher prices for the lighter oils were Humble Oil & Refining Company and Magnolia Petroleum Company.

Gasoline Market Steady

The gasoline market, however, remains fairly steady, and tank car prices in the Mid-Continent are holding unchanged.

The natural gasoline market has continued strong, with demand good and supplies scarce.

Kerosene also remains in good demand at unchanged prices, and the fuel oil markets are generally firm, as heating oil consumption is seasonally large, while industrial fuels are in fair demand.

Statistics Are Encouraging

The latest weekly statistics of the petroleum industry were encouraging.

They revealed a further large withdrawal of crude oil from storage and a less than seasonal addition to gasoline stocks.

Crude oil production and crude runs to refinery stills were both lower than in the previous week and at satisfactory levels.

Crude stocks, down to 270,563,000 barrels, are at a new 17 year low and are 11 percent smaller than one year ago.

Gasoline stocks are 1.5 percent smaller than at this time last year.

Fuel oil storage is 25 percent larger than a year ago, but the increase is largely justified, as furnace oil consumption is expected to be about 15 percent larger this winter than last winter.

Active Leasing in Missouri

Although Missouri barely rates as an oil producing state, having only small, shallow production, it has developed a full fledged leasing campaign and is being carefully examined by several hundreds of geologists. Wildcatting is just ahead, and it is conceivable that the discovery of oil in one of the tests might lead to a drilling boom comparable with that under way in Illinois.

Three separate districts of the state are attracting the attention of the oil companies and operators.

(1) First of these areas is central western Missouri, around the Nevada shallow field, Vernon County, south of Kansas City, where there is small production at 100 to 250 feet and some possibility of deeper oil. Counties in this play include, among others, Bates, Cass, Henry, St. Clair.

(2) Northeastern Missouri, along the Nemo uplift, northwest of Hannibal, is believed to have oil possibilities. Counties where leasing is proceeding include Marion, Shelby, Knox, Lewis.

(3) Last but not least, and on the contrary, the hottest of the leasing campaigns is that east of St. Joseph, in the Forest City basin, of north central and northwestern Missouri and northeastern Kansas. This large basin lies just across the above mentioned Nemo uplift from the Illinois oil field basin, the Forest City basin being to the west and the Illinois basin to the east of the uplift. The Forest City basin is to some extent similar geologically to the Illinois basin, and this similarity has been partially responsible for the great interest displayed in the Missouri leasing. The leasing and geological work in this district has spread northward into Iowa and westward into Kansas, and extends almost across the north border of Missouri and southward from the state line through several tiers of counties. A wildcat that is being drilled five miles west of Milan, Sullivan County, Missouri, is roughly near the center of the extensive area involved in the play. Structural conditions are favorable, and formations that are productive elsewhere are present, although it remains to be seen whether these structures will yield oil.

Oil Industry Awaits Scrutiny

It is indicated now that the monopoly investigating committee at Washington may not be ready to hear

testimony on the oil industry before the middle of January.

The anti-trust division of the Department of Justice is compiling data and lining up witnesses to present to the committee, and it is understood that a review of the Madison, Wisconsin, indictments and trial will constitute a part of the presentation.

It is reported that John Henry Lewin, assistant attorney general who worked on the Madison trial, will be the principal witness for the department.

It is expected that some prominent oil company executives will be asked to testify.

It is understood that the evidence on the oil industry will be of such nature as to show what proportion of the industry is controlled by the large companies, and how the large concerns operate, as regards price policies, patent arrangements, functioning of pipe lines, and marketing practices.

Oil Well Ownership Much Divided

Figures presented to the monopoly investigation committee by Dr. Willard Thorp, Dun and Bradstreet economist, showed that concentration of production in large corporations was much smaller in the oil industry than in some other industries. A figure that he gave indicated four companies accounted for 20 percent of the output of the oil wells of the country. Similar figures on percentage of total output in some other industries included: the aluminum industry, one company, 100 percent; automobiles, three companies, 86 percent; beef products, two companies, 47 percent; bakery products, three companies, 20 percent; cans, three companies, 90 percent; cement, five companies, 40 percent; cigarettes, three companies, 80 percent; bituminous coal, four companies, 10 percent; copper, four companies, 78 percent; corn binders, four companies, 100 percent; corn planters, six companies, 91 percent; flour, three companies, 29 percent; plate glass, two companies, 95 percent; safety glass, two companies, 60 percent; iron ore, four companies, 64 percent; lead, four companies, 60 percent; steel, three companies, 60.5 percent; whisky, four companies, 68 percent; women's clothes, four companies, 2 percent; wood pulp, four companies, 35 percent; zinc, four companies, 46 percent.

Pipe Line Investigation Proceeds

It now appears that the Interstate Commerce Commission will not issue any order on pipe line rates before next summer or next fall.

The investigation by the commission on the subject has been under way two years, and Examiner J. Paul Kelley is studying 410 pages of evidence, including testimony brought out at hearings and material on cost trends.

Examiner Kelley's recommendations will be considered although not necessarily followed by the commission.

Two years ago, Kelley recommended a 35 percent reduction in pipe line rates, whereas the industry had suggested only slight rate reductions of around 12 percent.

New Taxes Predicted

New tax legislation in the next Congress was predicted at Dallas, December 2, before the Mid-Continent Oil & Gas Association's standing committee on taxation.

Lovell H. Parker, of Washington, former chief of staff of the joint congressional committee on internal revenue taxation, pointed out that tax revenue for reducing the national debt or for balancing the budget can be produced in three main ways: (1) by increasing income taxes, (2) by applying a general sales tax, or (3) by increasing the national income.

Ten huge tires keep this geophysical swamp buggy afloat in the marshes of South Louisiana. These swamps were literally impassable to humans until swamp buggies, such as this Continental Oil Company explosive truck, were built. This swamp buggy actually floats its weight of several tons over the "bottomless" mire on huge tires. The tries are kept at a low pressure to cushion the truck's testy cargo from jarring on the clumps that support the driver and his helpers.

Answer Sought to Problem of Correct Storage

By L. J. LOGAN
Associate Editor

MEETINGS scheduled this week at Austin and Fort Worth may lead to more definite policies within the oil industry and among state conservation officials with regard to above-ground inventories of oil.

Colonel Ernest O. Thompson, chairman of the Texas Railroad Commission and of the Interstate Oil Compact Commission, has broadcast an appeal for information and ideas on the controversial question of what are proper inventories. And much evidence on the subject likely will be offered at the railroad commission hearing at Austin December 12 and at the Interstate Compact meeting at Fort Worth December 14 and 15.

Stocks Relatively Low

From various sources have come expressions of the opinion crude stocks, now down to about 272,000,000 barrels, are as low as they need to be; that no further reductions should be attempted; that production should be permitted henceforth to run as high as it can without resulting in additions to crude storage.

Colonel Thompson, after taking into consideration the figures on storage and the prospects for 4 percent larger petroleum consumption in 1939 than in 1938, has stated that he believed personally that the industry would be entering 1939 in good shape, as regards inventories.

Tom Anglin, Oklahoma representative on the Interstate Oil Compact Commission, has publicly advocated that no further withdrawals be made from crude storage.

Comment of API Head

Axtell J. Byles, president of the American Petroleum Institute, in his annual address to that organization at Chicago recently, conceded that it may be advisable to quit withdrawing crude from storage.

Byles himself raised the question, "What are economic inventories of crude oil?" And he proceeded to discuss the subject. "There seems to be considerable uncertainty and difference of opinion. As a general rule, one would say that, in periods of abundance of available flush production, such as have existed for many years, the nearer above ground supplies approach minimum economic working requirements the better. Under present circumstances, with crude oil inventories approaching 275,000,000 barrels, I ask another question—Have not crude stocks attained a relationship to economic levels which will in all probability make unnecessary and unwise further liquidation during the winter months and thus give relief to the producer in meeting current requirements of crude oil?"

"Any economist will admit," continued Byles, "that the nearer an even production rate is attained throughout the year, the better. This not only is economically sound, but it is true from the standpoint of every one engaged in the industry, whether he be wage earner, producer, transporter, refiner, or marketer, and for the consumer himself. Violent fluctuations in any industry are not in the interests of any one."

Byles added that economic requirements of finished and unfinished gasoline next March 31 probably would be around 80,000,000 barrels, an amount sufficient to assure adequate supply in the high consuming season of 1939.

Without increasing gasoline stocks beyond that level, the industry could add materially to storage this winter, the inventories on hand December 3 having totaled only 69,155,000 barrels.

Crude Runs Considered

The A.P.I. president expressed the belief that crude oil runs to refinery stills of not more than 3,100,000 barrels per day on the average during the winter season would probably result in only slightly higher inventories than minimum economic requirements.

At the time of his address, the crude runs were being held down fairly close to that figure, as crude production was being restricted under the comparatively low allowables of November. Subsequently, however, the refinery runs gradually increased, with crude production gaining somewhat. The runs averaged 3,295,000 barrels daily in the week ended November 26, but they were cut back to 3,175,000 barrels daily in the week ended December 3, latest period for which figures are available.

To Discuss Storage Survey

Awaited with special interest is the expected appearance at the Austin hearing of A. G. White of the Bureau of Mines. He has been invited to appear as a witness to describe the bureau's recent survey of crude oil stocks.

The survey was made at the request of the Interstate Oil Compact Commission and it required several years to complete. In the report on its findings, the Bureau of Mines advanced the opinion that the oil industry needed in storage no more than 200,000,000 to 250,000,000 barrels of crude oil. (The amount actually held on November 19 was 271,955,000 barrels.)

Storage Needs Estimated

It was shown in the survey that at the time of the investigation, July 1, 1936, to July 1, 1937, the minimum working stocks of crude oil required for operation of the industry were approximately 105,000,000 barrels, which represented oil that did not remain in one place more than a few days.

But in addition, the report

stated, it probably is necessary to have at least 100,000,000 barrels of contingent reserves above ground, to meet all of the industry's varied needs, in view of the characteristics of petroleum operations and the organization of the industry.

Actual Working Stocks

The report broke down into several divisions the 105,000,000 barrels of actual working stocks, described as almost continuously moving about. The total included about 11,000,000 barrels on leases for maintaining adequate deliveries to pipe lines; 21,000,000 barrels actually contained in gathering and trunk pipe lines; 12,000,000 barrels contained in minimum working tanks for main trunk line operations; 10,000,000 barrels of essential terminal storage, at gathering line terminals, main line transshipment points, and main line terminals; 4,000,000 barrels in transit to domestic refineries by barge or tank ship; and 47,000,000 barrels at refineries, representing a minimum safety factor of about two weeks' supply.

Safety Margin Needed

In the conclusion of the report, it was stated that although the survey indicated 200,000,000 to 250,000,000 barrels as necessary working stocks and contingent reserves, no exact level of desirable crude stocks could be fixed without a detailed analysis of individual company positions and policies and without more accurate information than that available concerning potential reserves and the extent to which a program of underground storage had replaced above ground storage. In the absence of such information, it was stated, a considerable factor of safety in stocks undoubtedly is necessary in an industry in which production and demand are subject to such rapid change.

Excess at Tank Farms

If further reduction of crude oil from storage were justified, the withdrawals necessarily would be largely from the tanks at tank farms. The Bureau of Mines report showed that of the 311,000,000 barrels of total storage on hand June 30, 1936, 199,000,000 barrels was at tank farms, whereas it was indicated that around 100,000,000 barrels would have been sufficient.

By now, as indicated previously, the total crude stocks have been cut down to about 272,000,000 barrels, however, and most of the 39,000,000 barrel reduction has occurred at the tank farms. On October 1, 1938, stocks of crude at tank farms and in pipe lines together were reported by the Bureau of Mines at 220,340,000 barrels, and of that total the tank farm storage probably constituted around 170,000,000 barrels.

Some Old Oil Held

The report embodied data on the storage oil by age groups, and that information supported the opinion that further withdrawals would be economically sound. It was stated that the 311,000,000 barrels of crude in storage June 30, 1936, included about 39,000,000 barrels stored before 1925 from flush production at Salt Creek and other unprorated areas; 27,700,000 barrels stored in 1925-1930, when Seminole, Oklahoma City and other flush fields were over-producing; 50,800,000 barrels stored in the East Texas era, 1931-1935; and 193,000,000 barrels of current stocks, stored in 1936.

It was pointed out that the 67,000,000 barrels of the two older groups, mostly at large tank farms of a few large companies, could not have much relation to working requirements, and that the 51,000,000 barrels stored in 1931-1935 was of similar surplus nature, although some of it might be classed as contingent reserves. The conclusion was reached, therefore, that at the time of the survey the minimum requirements for working stocks and contingent reserves could be met from the current stocks of 194,000,000 barrels and some part of the 51,000,000 barrels stored in 1931-1935. The indicated economic level of crude stocks at the time of the survey was described, in other words, as being roughly between 200,000,000 and 250,000,000 barrels.

Refiners' Views Sought

In planning the December 12 proration hearing, the Texas Railroad Commission invited 48 executives of the refining divisions of major companies to attend.

Later, invitations were extended to include Texas refiners and those operating on Texas oil.

The refining division men were requested to furnish information on market demand for crude and its products, current storage, and opinions as to what 1939 stock levels should be.

Information will be solicited at the hearing also on importations of Louisiana and Arkansas and Mexican crudes. In that connection, Eastern States Petroleum Company, through L. J. Walsh, Houston, vice president, will be prepared to contend that its imports of Mexican crude are refined and re-exported and thus do not enter the domestic market.

Oil Compact Change Studied

Following the proration hearing at Austin, some of the testimony developed there will be further considered December 14 and 15 at the quarterly meeting of the Interstate Oil Compact Commission, at Fort Worth.

At the Fort Worth meeting the compact commission will hear a report of its subcommittee that was appointed at Colorado Springs last summer to make recommendations as to the form in which the compact should be re-submitted to the state legislatures and the next Congress. The compact will expire in September, 1939.

The subcommittee met at Dallas December 2 and agreed that the compact should be preserved, but announced no decision as to any changes that might be recommended, and scheduled another meeting on the problem at Austin December 12.

The subcommittee is headed by Judge E. R. Sloan, chairman of the Kansas Corporation Commission, and other members include Colonel Ernest O. Thompson and Elwood Fouts, Houston attorney, representing Texas; W. J. Holloway, attorney, and Art L. Walker, secretary of the compact commission, representing Oklahoma; and Ennis Harris, attorney, representing Kansas along with Judge Sloan.

Following the Dallas conference it was divulged that matters under consideration included the advisability of naming a federal authority to allocate production among states, and the possibility of bringing refiners into the compact.

It is expected that the subcommittee's recommendations will be made known following the general meeting of the compact commission at Fort Worth.

Meanwhile, it is being predicted generally that there will not be any change in the form of the compact agreement, which provides merely for the prevention of physical waste in the production of oil.

Rotary Conquers Michigan's Traverse Lime

By NORMAN X. LYON
Staff Writer

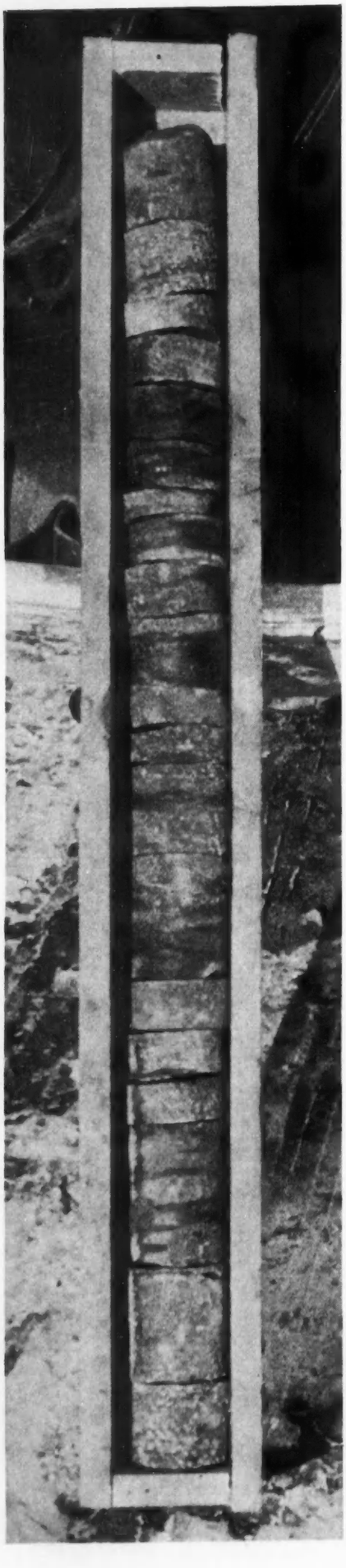
COMPLETION with rotary of a 3900-foot well, the first deep rotary drilled well in Michigan out of approximately 6000 tests put down since 1925, offers an interesting chapter in the state's oil industry history.

Rotary was used successfully by Parker Drilling Company of Tulsa, Oklahoma, as contractor, on Gulf Refining Company's Arthur Hall 4, NE SE SW Section 34-19n-6w, Redding Township, Clare County. Prior to making the first shot to the Monroe limestone with rotary, Parker drilled with rotary to the 1800-foot 6-inch casing point on two other Gulf locations in the same field. These tests were completed to the 3900-foot producing zone with cable tools operated by Lupher Drilling Company, contractors active in both Michigan, Ohio and Illinois.

Contractors finished rigging up and spudded on October 23 and on November 16 bottomed out at 3910 feet for cementing 6⅝-inch casing at the top of the producing horizon, for an over-all time to casing point of 24 days.

Actual drilling time was under 24

Gulf Refining Company's Hall 4, Clare County, is the first rotary to successfully drill to 3900 feet in Michigan.



A section of Traverse cores taken from Gulf's Hall 4 with rotary at 3600 feet.

days. Trouble was encountered in getting the 10-inch glacial drift string landed properly at the intended 600-foot mark. As a result added trips and time were necessary to ream and 2 days were lost waiting on cement to set. Two core runs were made in the 3200-3400-foot Traverse lime zone, and the last 12 feet to the casing point also was cored. One 8-hour tour was lost with a pump breakdown.

From the records of the pioneering and first rotary completed deep test not only has the old contention that rotary is impractical in Michigan been proven a fallacy but likewise considerable evidence developed that rotary may assume a place of importance in the state. The first well practically demonstrated that from 20 days up can be saved on 3900-foot tests in Central Michigan and other districts of equal drilling conditions.

The factor which will determine further introduction and use of rotary will be cost differentials. The average price in the Freeman-Redding district for cable tools is $1.95 per foot, although the majority of contractors concede that it should be at least $2.25 per foot, and that on the $1.95 price fishing jobs or other troubles can quickly wipe out any possibility of making a fair drilling profit. At least one contractor, who has done considerable drilling in the field, has received a flat $2.25.

Neither Gulf or Parker officials revealed the per foot rate of the rotary hole, although it was generally understood to have been at $4.50. On a 3900-foot test the contract foot rate would represent an added cost of $8775 for rotary over cable. Direct saving with rotary would come in elimination of pipe strings.

However, in the opinion of many operators, rotary drilling prices would have to be brought into the $3 per foot range to offer any material attraction to the majority of Michigan operators. At $3 per foot, rotary would prove highly attractive in many areas and bring drilling cost on a par or below cable and at the same time cut drilling time around 50 percent.

Where a combination of rotary and cable tools have been used in Michigan prices vary as to whether or not the same contractor has the complete hole or only the rotary section. Prices for rotating in the 600- and 850-foot drift strings have ranged around $4.25 to $4.75 per foot. Where the same contractor rotates in the drift or 6-inch section and completes the hole with cable the price general is $2.25 per foot for the entire hole.

At the present time four companies besides Parker are contracting rotary work in Michigan. These are: Lupher Drilling Company, Taggart Brothers, J. V. Wicklund Development Company, and L. C. Neeley.

Factors which are expected to bear heavily on the "trend to rotary" are (1) continued discovery of substantial fields in the central, north central Michigan area which is similar to Freeman-Redding in geological conditions, thick drift, etc.; (2) opening of pools where majors hold sizeable drilling blocks, and (3) plain economics.

Incidentally, the first rotary drilled well was completed for 547 barrels initial production.

The casing program for the well included 548 feet of 10-inch, and 3910 feet of 6⅝-inch. Ordinarily about 600 to 680 feet of 10-inch would have been put in, but trouble in landing it changed the program. Only 20 feet of 14-inch surface pipe was set.

The hole was spudded with an 11¼ inch rock bit and carried to approximately 640 feet. From this point on 8¼-inch rock bits were used to the casing point, excepting, of course, the core zones.

A total of 19 bits, exclusive of core bits, were used for the complete job. Of this number 18 were 8¾-inch. Seven 8¾-inch bits were used from 640 to the top of the Traverse limestone, 3280 feet. Thus, the approximately 630-foot thick Traverse section, hard lime streaked with shale, required 10 of the 8¾-inch bits, for an average of about 60 feet to the bit.

One particular hard streak around 3600 feet ground down a rock bit in 17 feet.

The Traverse limestone section, member of the Devonian which also includes the Bell Shale, Dundee, Monroe and Sylvanian, is by all odds the toughest zone to the Dundee-Monroe beds to drill in Michigan. It is composed of an alternating series of beds of limestone, shale, dolomitic limestone, and anhydrite. This formation produces in Western and Southwestern Michigan where it lays about 1000 to 1600 feet below the surface, but in Central and Northern Michigan to date has not been identified or developed as a commercial oil zone. It does, however, frequently carry considerable oil and gas in

Central Michigan but not consistent enough to develop.

Frequently the Traverse carries considerable water, with some tests in Central and North Central Michigan estimated to have produced salt water at the rate of 5000 to 30,000 barrels per 24 hours. This water zone constitutes one of the major problems of drilling with cable tools. To case it off not only is an added expense but often only temporarily effective as deeper drilling frequently brings new water beds. Likewise, to case off the water an operator must either risk the possibility of running out of hole or come back up the hole and ream from the last casing point.

It is interesting to note, that in three specific cases during the past six weeks in Michigan, a comparatively new brine formation plug seal has been used successfully on cable tool jobs to "dry up holes" in the Traverse. On one of these tests, Bridger Basin Oil Corporation's State 1, SE NW SW 29-19n-2e, Gladwin County, an estimated 5000 barrel per 24 hour Traverse salt brine water flow was encountered at 2900-2922 feet. The first application of the seal did not completely seal out the water, but Leonard Drilling Company, contractors, reported that the first treatment was effective enough to remove any drilling problem caused by the original flow.

The Traverse lime in the Freeman-Redding field of Clare County, location of the rotary test, is not a carrier of water in troublesome amounts, however.

The casing program on the discovery, drilled with standard cable tools, included 656 feet of 10-inch drive casing; 759 feet of 8¼-inch casing; 1749 feet of 6⅝-inch casing (cemented); and 3891 feet of 5-3/16-inch casing, cemented.

From the base of the drift, approximately 650 feet, to about 1350 feet the formation is both wet and cavy. The amount of 8-inch to protect this zone varies considerably from 750 feet to as much as 1200 feet. This string is not cemented and is recovered after cementing in the 6-inch.

The Michigan Stray sand which comes in around 1400 feet has carried considerable gas, estimated up to 10 million feet, in the field, but is not consistent. The Lower Marshall carries varying amounts of water. The log of Socony Vacuum Oil Company's Van Horn 6, NW NW NW 3-18n-6w, shows 648 feet of 10-inch drive; 1100 feet of 8¼-inch and 1742 feet of 6-inch casing. At 1450-1460 feet the well showed an estimated 1,500,000 cubic feet of gas and at 1490 carried a hole full of water from the Marshall.

This zone from 900 to 1500 feet has offered a bigger problem to cable tool contractors than any other section in the Freeman district, as bits frequently hang up.

Below the 6-inch casing point to the top of the Traverse is a zone that offers either rotary or cable tools some of the "best going in the world." It is the Antrim shale section which cuts easily. Ordinarily the shale zone carries about enough water for good drilling.

Perhaps the most graphic way to describe the record of the first Michigan rotary drilled well is to review briefly the history of drilling in the same area under predominating methods employed. From completion of the discovery well in the Freeman-Redding area, July 9, 1938, to November 26, 40 tests had been completed, all within a radius of two miles of the discovery.

Gulf Refining Company has been the leader in adapting the rotary over cable tools, having used rotary to drill to the 6-inch casing point on six out of seven completed wells, and rotary all the way on one. Pure Oil Company, who has used rotary for the drift section in the Sherman field, Isabella County, on about 75 percent of its wells, is second to Gulf from the standpoint of rotary adaption in the Freeman-Redding district. Pure used rotary to land 6-inch on four out of nine tests.

In both the above cases drilling was handled by drilling contractors. Gulf does not operate drilling tools in Michigan. However, Pure has done its own cable tool drilling in such districts as Porter, Jasper and Sherman and on wildcats, contracting the rotary work.

Others to use rotary to date in the Freeman district include Daily Crude Oil Company, three out of five tests. This company has its own cable tools, contracting the rotary. The three tests drilled by Taggart Brothers were shallow gas tests, drilled with the company's own rotary. McClanahan Oil Company, cable tool contractors, sublet rotary, on one of its own wells.

All other work in the field has been handled with cable tools, about 95 percent by contractors.

The best cable tool drilling time to date in the field was 40 days from time of spudding in 10-inch drive pipe to completion, including 72 hours down-time for setting of cement at the 5-inch casing seat. This mark was registered by Edward M. Shields, contractor for Socony Vacuum, Inc. Shields has handled all of Socony's drilling in the field.

Where the 6-inch was rotated in, the best drilling time to date was made on Gulf Refining Company's Van Horn 4, completed in 31 days. The 1744-foot string of 6-inch was rotated in by Parker Drilling Company and the well completed to 3883½ feet with cable tools by the Lupher Drilling Company. From the 1744-foot 6-inch casing point to the 5-inch casing point at 3870 feet, Lupher cable tool drilled the 2126 feet in 13 days.

Less Drilling Time

Average drilling time from spudding to completion with cable tools is between 43 and 45 days. Average time where the 6-inch is rotated in is between 33 and 36 days.

Parker Drilling Company on the first top to bottom rotary had an over-all time of 24 days to the 3910-foot casing point—actual drilling time of 15 days.

In view of the fact that Parker was pioneering in some respects and working under semi-experimental conditions, the rotary run left little to be desired. Perry E. Davis, day tour-driller and in charge as tool pusher, expressed the opinion that over-all time to casing point could be cut to around 18 to 22 days, or about 20 to 25 days under cable tool time.

Davis set and cemented 10-inch casing at 548 feet through the glacial drift on the first test with rotary, but sees the possibility that this string could be eliminated on future wells.

The best run recorded was from 650 to 1210 feet drilled in 8 hours. In the Antrim shale section from 250 to 340 feet were drilled on 8-hour tours.

Although the derrick when built was constructed with a conventional cable tool belt and engine house and the engine moved in with the plan to drill the test into the producing formation with cable tools, this was shifted at the last minute and Parker drilled in, cored, with rotary. It was then swabbed into production.

Special muds customarily are used by most rotary contractors for drilling to the 6-inch casing point. However, Davis said in drilling the deep test virtually no added special mud was found necessary. A density of 9.7 of .3 viscosity was carried on the deep test. Table speed at 3500 feet was 66 revolutions per minute.

A 122-foot rotary derrick was brought in from the Mid-Continent for the rotary rig.

Phase Equilibria in High

By DR. F. V. L. PATTEN and DENNY C. IVEY
Engineering Department, Railroad Commission of Texas

As long as reservoir pressures were low, a knowledge of the composition of the products of any well was all that was necessary to determine their phase relationships in the reservoir since simple laws of vapor pressure, solubility, etc., were followed with a fair degree of exactness. As drilling has been carried to greater depths and higher reservoir pressures have been encountered, however, it has been found that such simple relationships do not hold and that the determination of reservoir phase relationships requires more extensive investigations. Particularly is this true of the type of well which is generally known as a "condensate" or "distillate" well. This type of well generally produces a water white or nearly water white product of relatively high A. P. I. gravity at a high gas-liquid ratio. There is considerable variation in these properties in different fields, however. The writer has found that the gravity of the liquid products of the wells as obtained by ordinary low pressure separation, varied from 47 to around 70° A. P. I., while the color ranged from water white to dark brown. The ratio of gas to liquid varied from fifteen thousand to several hundred thousand cubic feet per barrel.

An indication of the probable behavior of materials such as those produced from condensate wells may be obtained from the careful work which has been done on binary mixtures of hydrocarbons. Sage, Lacey and Schaafsma[1] have made such determinations on mixtures of methane and propane, while Kay[2] and his associates have worked with mixtures of ethane and heptane.

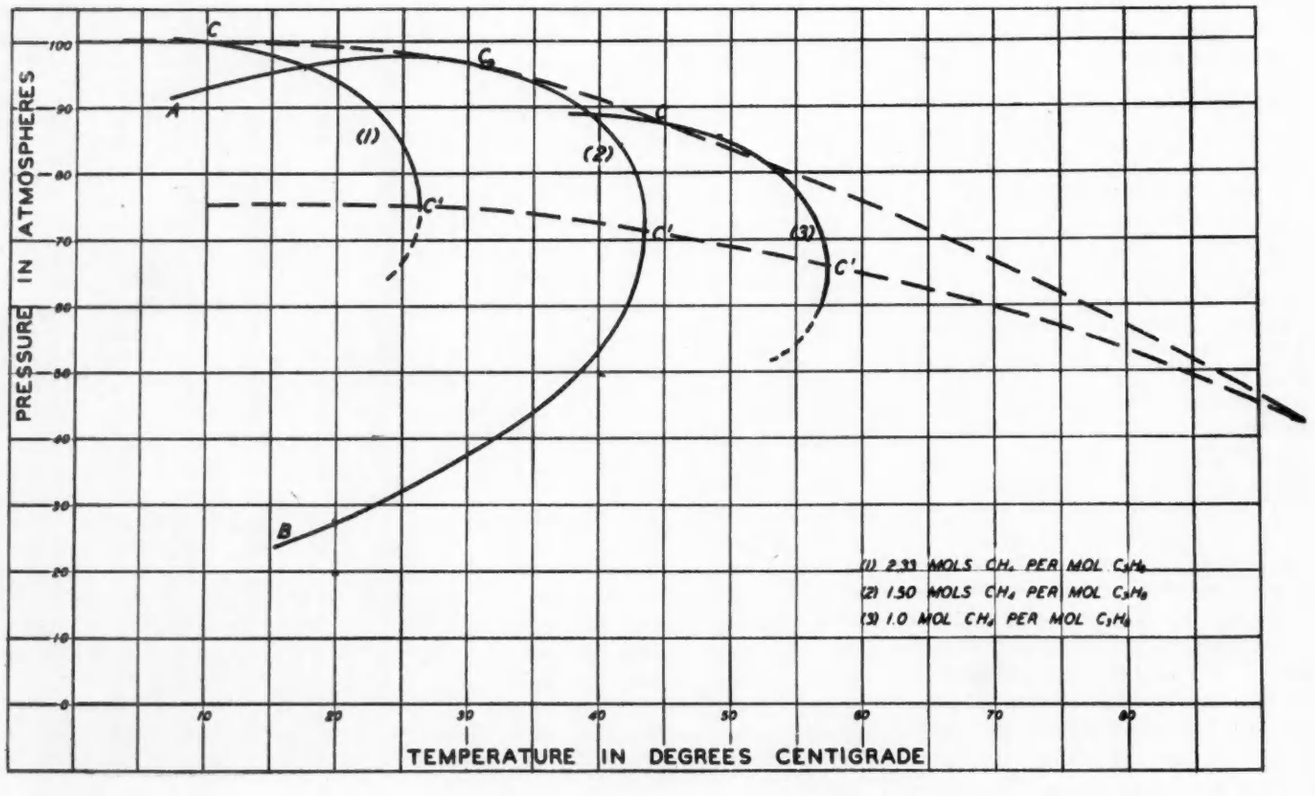
FIGURE 1

Pressure-Temperature Curves Methane-Propane System. Constant Composition.

These investigators have determined the pressure-volume-temperature relationships of these mixtures at pressures up to their critical pressures and have determined the density and composition of the liquid and gaseous phases.

Figure 1 shows the pressure-temperature curves for methane-propane mixtures of constant composition. Curve (2) in this figure is for a mixture of 60 mol percent methane and 40 mol percent propane. The portion of this curve B C′ C is the dew point curve for the gas phase of this mixture. The portion of the curve A C is the vapor pressure or bubble point curve for the liquid phase. The point C is the critical temperature and pressure for the mixture.

At this time it will be advisable to define critical temperatures and pressures for unicomponent systems and for multicomponent systems. The critical temperature for a system having only one component is defined as the maximum temperature at which the material can be liquefied. The critical pressure is the pressure required to liquefy the material at its critical temperature. At the critical temperature and pressure the liquid



Pressure Condensate Wells

The accompanying material is highly important to every Texas oil or gas producer operating in a field where high gas/oil ratio wells are found. Likewise, it should be of interest and value to operators in distillate fields in other areas.

The data on which the article is based was presented by Dr. F. V. L. Patten at the Texas Railroad Commission's hearing on condensate wells, and is likely to be the evidence on which an order governing the operation of such wells will be formulated.

There is a growing number of distillate fields, particularly along the Gulf Coast, and it is to be expected that more production of this type will be found with deeper drilling.

and gas phases have the same densities.

In a system containing two or more components, the critical temperature and pressure are the temperature and pressure at which the liquid and gas phases have identical physical properties and identical compositions. As will be seen from a study of Figure 1, it is possible to have a liquid phase above the critical temperature for the mixture and it is also possible to have liquid and gaseous phases above the critical pressure for the mixture.

The maximum temperature at which a liquid phase can exist (the temperature at C' in Figure 1) is called the cricondentherm for the mixture. It will be observed that the critical temperatures and the cricondentherms increase as the mol fraction of the heavier component increases. To illustrate these facts the critical temperatures and cricondentherms for mixtures of 50 mol percent methane and 70 mol percent methane have been included in Figure 1.

If a mixture of 60 mol percent methane and 40 mol percent propane (1.5 mols methane per mol propane) is at a temperature of 20° C., and a pressure of 20 atmospheres, a single gaseous phase will be present. When the pressure is increased to 27 atmospheres a liquid phase will appear. As the pressure is increased beyond this value the liquid phase will become larger and the gaseous phase will become smaller until at a pressure of 97 atmospheres a uniform liquid phase will be present.

If a mixture of 60 mol percent methane and 40 mol percent propane per mol is at a temperature of 40° C., and a pressure of 50 atmospheres, a gas phase only will exist. When the pressure is increased to 53 atmospheres a liquid phase will appear. As the pressure is increased further, the volume of the liquid phase will increase up to a certain point, after which it will decrease and finally disappear at a pressure of 88 atmospheres.

If a mixture of 60 mol percent methane and 40 mol propane is at a temperature of 31.1° C., and a pressure of 30 atmospheres, a uniform gaseous phase exists. When the pressure is increased to 38 atmospheres a liquid phase will appear. As the pressure is increased further, the liquid phase will become larger, and the densities of the gas and liquid phases will approach the other until a pressure of 95.7 atmospheres is reached. At this pressure the density and composition of the liquid and gaseous phases will become identical and the meniscus between the two phases will disappear. This is the critical pressure and temperature of the mixture.

If a maximum of 60 mol percent methane and 40 mol percent propane is at a pressure of 20 atmospheres and a temperature of 45° C., a gaseous phase only will exist. If the pressure is increased above this value a single gaseous stage will exist throughout the pressure range.

Data of this kind may be plotted in a number of different ways. One of the common methods of illustrating these data is to plot the vaporization equilibrium constant as a function to the pressure at constant temperature or as a function of the temperature at constant pressure. The vaporization equilibrium constant is the ratio of the mol fraction to a component, say methane, in a vapor phase, to its mol fraction in the liquid phase.

A plot of the vaporization equilibrium constant for methane and propane in the methane-propane system at a temperature of 31.1° C., as a function of the pressure, is shown in Figure 4. It will be observed that the vaporization constant for propane first decreases and reaches a minimum at between 50 and 60 atmospheres. Above this pressure the vaporization equilibrium constant increases to a value of one at 95.7 atmospheres. This is the critical pressure for that mixture of methane and propane which has a critical temperature of 31.1° C. (i.e., for a mixture of 60 mol percent methane and 40 mol percent propane). The vaporization constant for methane decreases as the pressure is increased and meets the vaporization constant for propane at the critical pressure.

It has been found that similar curves are obtained for mixtures having more than two components. The results of some experiments which have been conducted by Katz and Hachmuth[3] on mixtures of Oklahoma City crude oil and natural gas at 200° F. are shown in Figure 5. The use of such constants is subject to certain limitations. In two-component systems the vaporization constants are independent of the composition of the mixture, but in multicomponent systems the constants do vary somewhat for different mixtures. Nevertheless, constants obtained for one mixture may be used with a reasonable degree of accuracy for any similar mixture.

The principal variations in the constants at low pressures occur in the values for methane. No general rule has yet been established which will enable us to determine what the constant for methane will be for different types of mixtures. At very high pressures all of the constants are also subject to considerable variation. It will be noted in Figure 5 that the constants for the mixture used by Katz and Hachmuth appeared to join each other at a value of one at approximately 500 pounds per square inch. This is the critical pressure for the mixture used by Katz and Hachmuth. The critical pressure for other mixtures will in-

crease with increase in the molecular weight and concentration of the heavy ends. Thus Katz and Singleterry[4] have found that the critical pressure for mixtures of natural gas and a crude oil containing heavy tars apparently will not be reached below 25,000 pounds per square inch.

The value of the critical pressure will affect the vaporization equilibrium constants for all of the components in the higher pressure ranges and hence constants like those determined by Katz and other investigators for the high pressure range cannot be accurately applied to mixtures which differ markedly from those used in these determinations.

In the low pressure range, however, such published values may be used with greater accuracy. The writer has determined a number of equilibrium constants for the products of condensate wells at various temperatures and at pressures up to 2350 pounds per square inch. Some of the values which have been ob-

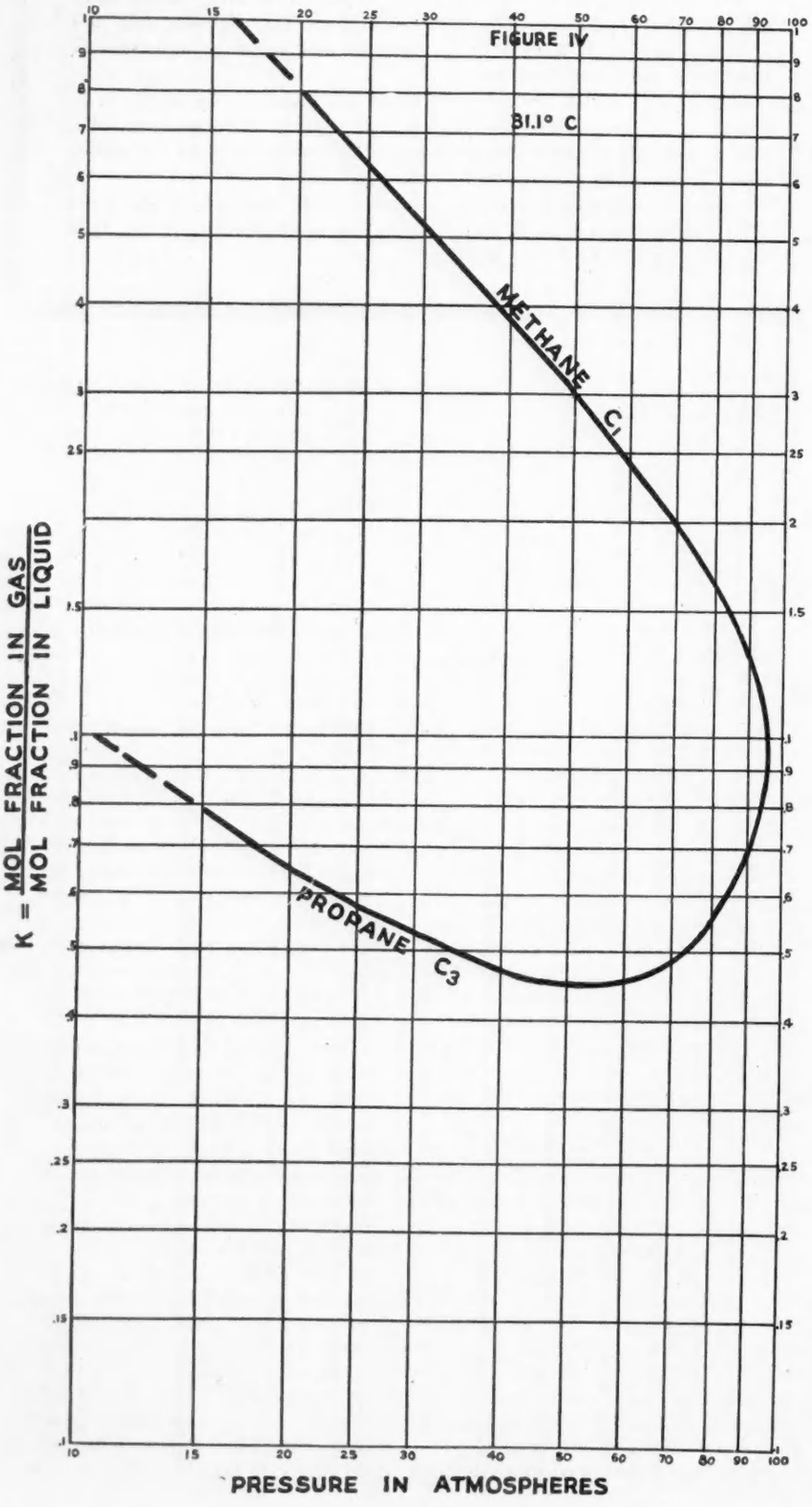


FIGURE 4
Methane-Propane System Vaporization Constants 31.1° C.

tained for these mixtures are shown in Table 1.

It will be observed that the determined constants for the individual hydrocarbons having molecular weights higher than methane check very well with Katz's and Hachmuth's values. However, it will also be observed that the constant for methane shows considerable variation for different mixtures. It will be observed further that no single set of

TABLE 1

Well No. 1

Pressure=760 Lb./Sq. In. Temperature=75° F.

HC	Mol. Percent in Gas	Mol. Percent in Liquid	K (Calculated)	K (Katz and Hachmuth)
C_1.....	86.64	12.74	6.8	5.3
C_2.....	7.52	7.76	.97	.96
C_3.....	3.61	9.91	.36	.35
I C_4....	.50	2.61	.19	.128
N C_4....	.96	8.43	.11	
I C_5....	.41	7.25	.06	.044
N C_5....	.14	4.62	.03	
C_6+....	.22	46.66	.0047	

M. W. C_6 + = 114

Well No. 2

Pressure=2000 Lb./Sq. In. Temperature=80° F.

C_1.....	93.71	36.10	2.60	2.50
C_2.....	3.16	3.26	.97	.79
C_3.....	1.31	5.09	.26	.37
C_4.....	.84	4.81	.175	.20
C_5.....	.47	3.85	.122	.10
C_6+....	.51	46.90	.011	

Pressure=2320 Lb./Sq. In. Temperature=90° F.

C_1.....	86.68	52.64	1.65	2.4
C_2.....	5.45	7.42	.73	.80
C_3.....	3.93	7.90	.50	.44
I C_4....	.17	1.92	.41	.24
N C_4....	2.49	4.50		
C_5.....	.42	4.18	.10	.13
C_6+....	.86	21.44		

M. W. C_6 + = 119

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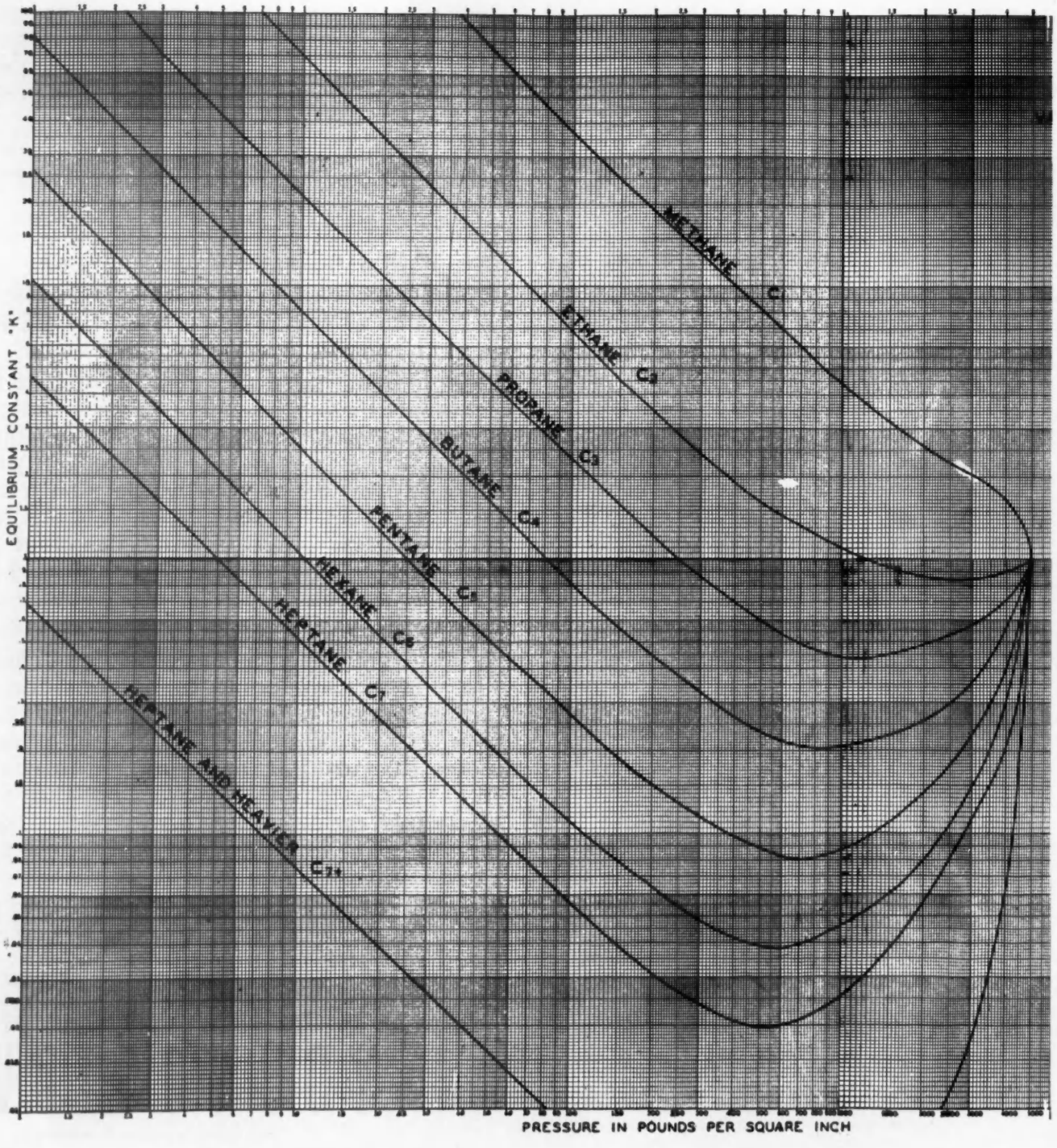
constants will apply to the heavy ends of all mixtures.

Because of the lack of a dependable method of calculating phase relationships under the pressures and temperatures existing in the reservoirs from which condensate wells produce, it is necessary to make specific determinations on the fluids produced from such wells. A method of taking samples from such wells and investigating them under reservoir conditions has been developed and will be described.

The particular problem which instigated this investigation was that of classifying condensate wells. In House Bill No. 266,[5] passed by the Forty-fourth Legislature of the state of Texas, a gas well has been defined as one which produces more than one hundred thousand cubic feet of gas per barrel of oil. The United States District Court for the western district of Texas, Austin Division, ruled that oil "should lie in the bed or reservoir as oil and as oil be produced from it" in the case of Clymore Production Company, et al, vs. E. O. Thompson,[6] et al, wherein the question of classification of certain condensate wells arose. Therefore, the question arising with the classification of such wells was one of determining whether or not more than one barrel of liquid per hundred thousand cubic feet of gas lay in the reservoir as liquid and was produced from the reservoir as liquid. Sufficient data have been collected on a wide variety of condensate wells to make a definite classification possible. Incidental to such determinations, data have been obtained which show the methods of producing con-

FIGURE 5

Variation of Equilibrium Constant "K". Pressure at 120° F. (Data from I.S.C.E Vol. 29, No. 9)



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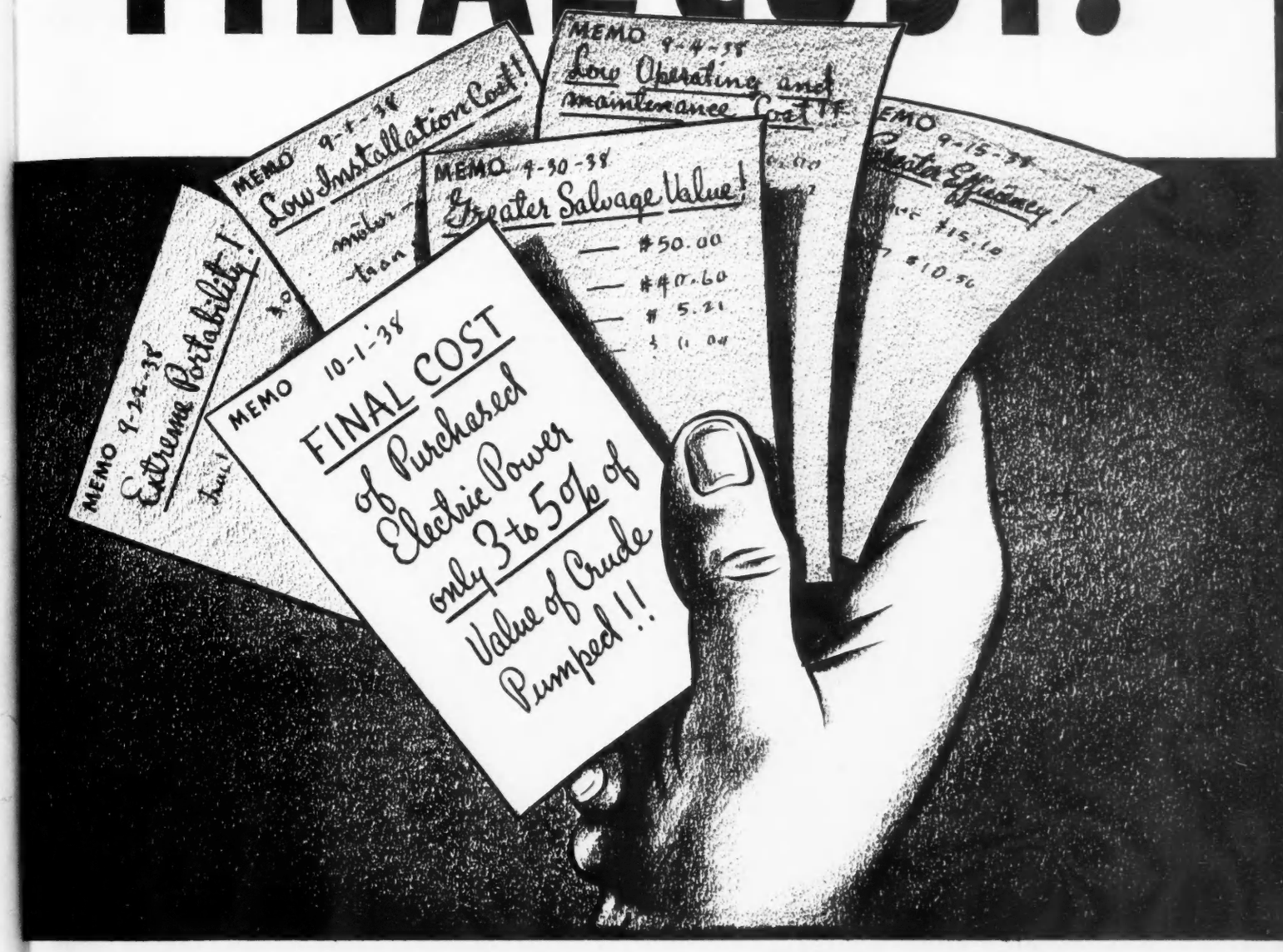

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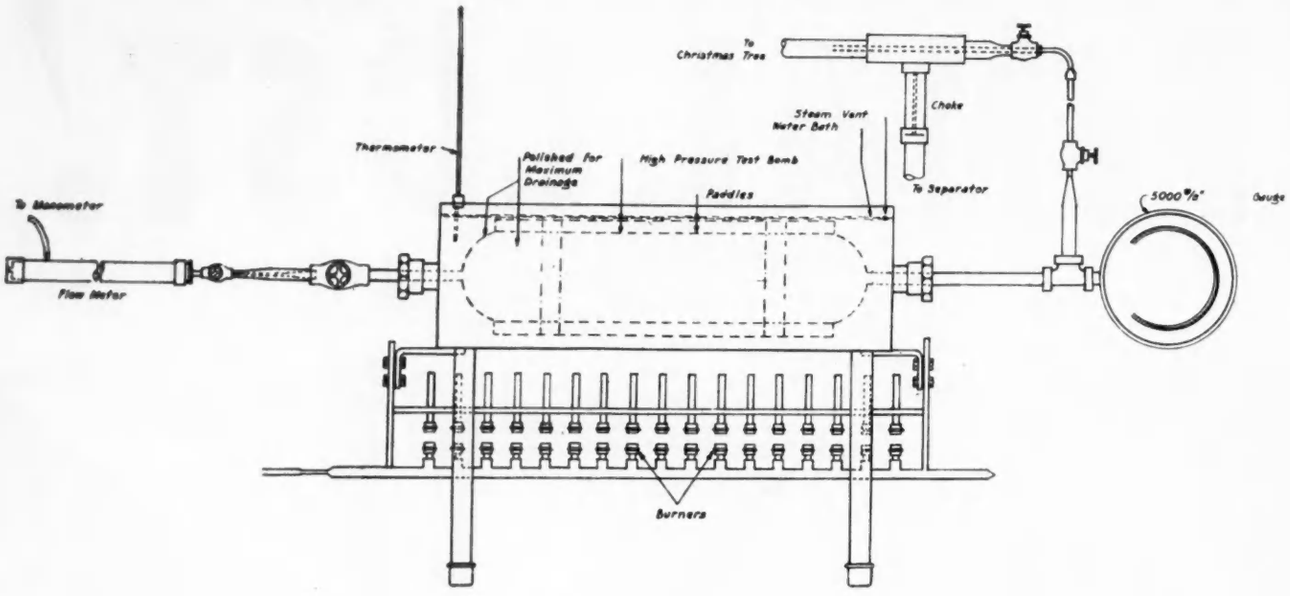
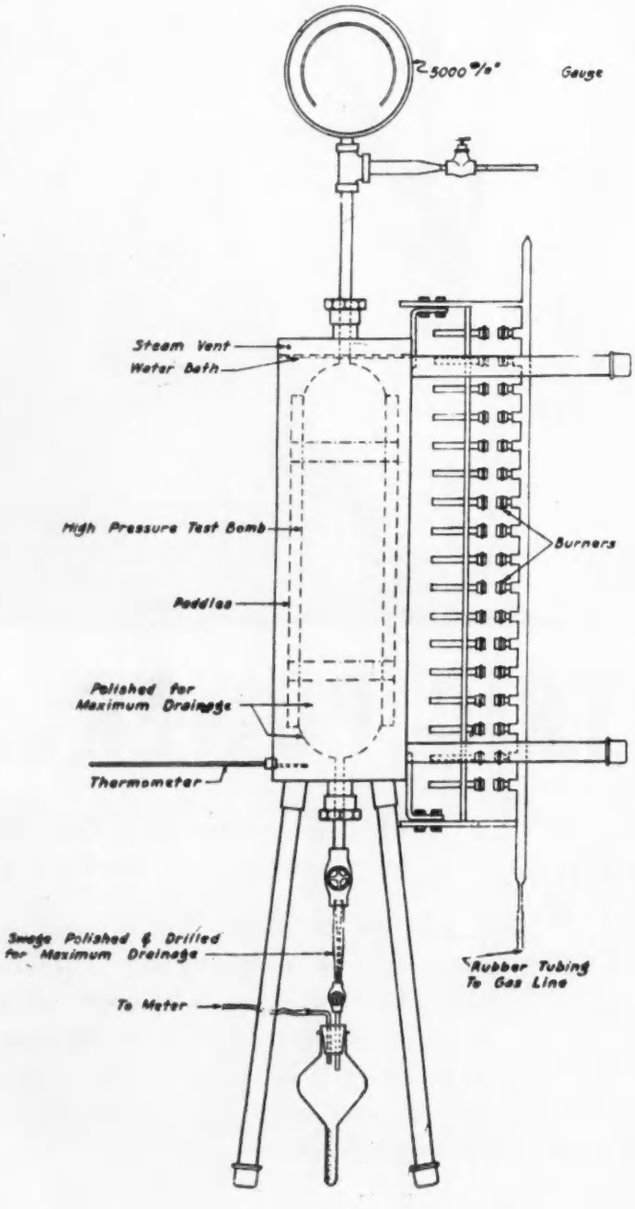


FIGURES 7 AND 8
High Pressure Equilibrium Bomb



densate pools, which will give the greatest ultimate recovery.

Description of Method and Apparatus

The method employed in this work has consisted of obtaining representative samples of the fluid produced from the wells, bringing them to equilibrium under reservoir conditions and measuring the flashed volume of the liquid phase when a liquid phase was present. Determinations were also made of the approximate shrinkage in volume which occurred on flashing.

The method of sampling varied somewhat from well to well because of the peculiar conditions existing at each well, but the procedure most generally used will be described.

The samples were always taken at the well head. Preliminary determinations were usually made of the gas-condensate ratio as obtained by large scale low pressure separation, the gasoline content of the residue gas from the separator, the gasoline content of the gas phase at well head pressure and temperature, the volume of gas released per cubic centimeter of liquid when the well head liquid phase was flashed to atmospheric pressure, the gasoline content of this dissolved gas, the temperature and pressure at which the sample should be collected in order to obtain reservoir pressure when it was heated to reservoir temperature, and the volume of gas measured at 14.65 pounds per suqare inch and 60° F., which the bomb contained at reservoir temperature and pressure. From these data the volume of liquid collected at well head pressure and temperature which was required to give a representative sample of the fluids in the flow stream was calculated.

A copper tube was inserted into the middle of the flow stream at the well head as shown in Figure 7 and the fluids allowed to flow through the equilibrium bomb until the calculated volume of liquid had been collected. The rate at which liquid separated in the bomb was found by preliminary determinations in which gas was allowed to flow through the

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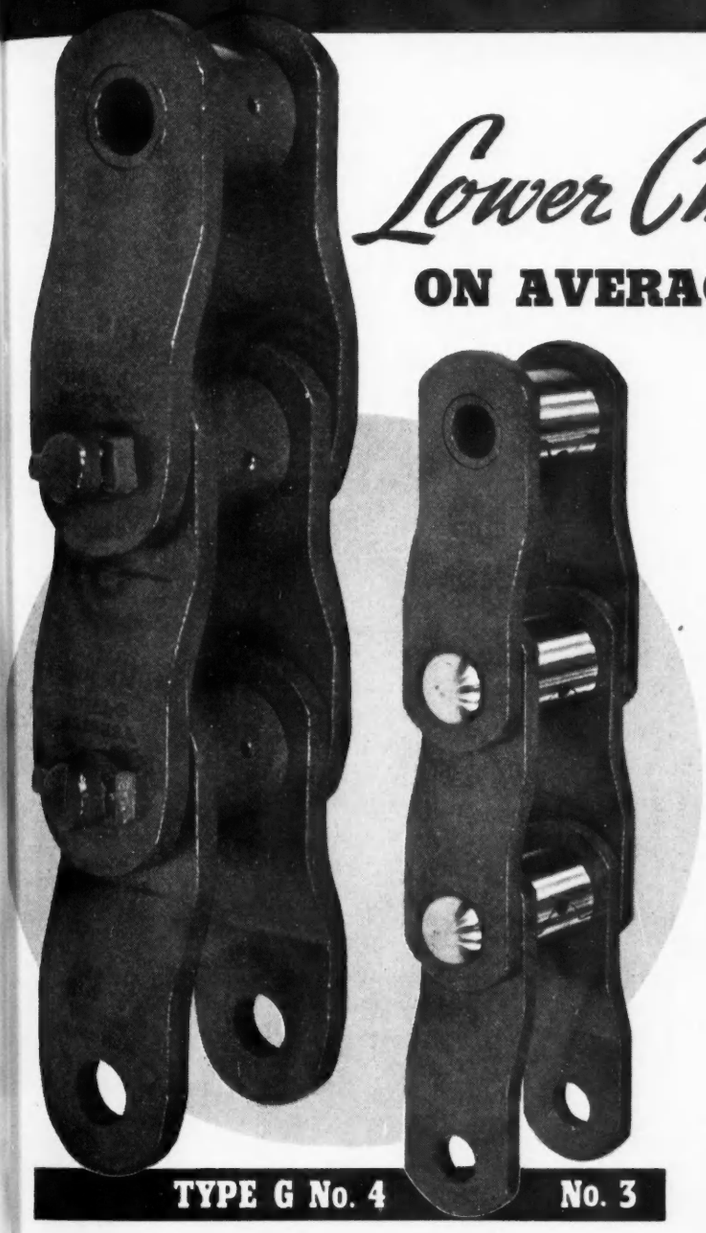

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bomb at a definite rate. Samples taken at well head temperature and pressure from some wells would not attain reservoir pressure when heated to reservoir temperature. In these cases the bath was cooled to the required temperature, a small high pressure separator was inserted in the line between the wellhead and the equilibrium bomb, and an additional volume of gas phase from the well head was injected.

The bath around the equilibrium bomb was then heated to reservoir temperature and the bomb was rotated in a horizontal position for a period of two or more hours. It was found that equilibrium was very closely approached well within this time. The bomb was then placed in a vertical position as shown in Figure 8 and the fluids withdrawn in small proportions from the bottom of bomb through the calibrated nipple shown in the figure. They were then released to atmospheric pressure and allowed to flow through the small glass separator shown in the figure. The liquid obtained on flashing each small portion of fluid removed was measured in the separator. The gas released was measured simultaneously with a small test meter. As long as the liquid phase was being removed the gas-liquid ratio obtained on flashing remained constant. When the gas phase appeared there was a marked increase in the gas-liquid ratio. By plotting the gas volume against the liquid volume the flashed volume of the liquid phase was determined. Since the volume of the nipple through which the small portions of the fluids were removed was known, the ratio of the formation to the flashed volume and, hence, the formation volume of the liquid phase could be calculated. This general method of examination was applied to a number of condensate wells.

Summary of Tests with Equilibrium Bomb

The tests which have been conducted with the equilibrium bomb on the materials produced from a wide variety of condensate wells have shown the following results:

1. The materials produced from condensate wells leave the reservoir in the gas phase when the liquid produced is water white or nearly water white. At most, only a trace of the liquid obtained at the surface leaves the reservoir in the liquid phase.

2. Most condensate reservoirs are very close to their retrograde dew points. A slight decrease in pressure will cause the condensation of a liquid phase in the reservoir.

3. The true gas-oil ratios of wells producing some "dark" oil can be calculated if the compositions of the fluids produced from the condensate wells and the low-ratio oil wells in the same field are known.

Discussion

In order to illustrate the behavior of condensate fields and condensate wells, the data in Figure 4 has been recomputed and the ratio of mols of methane to mols of propane has been plotted as a function of the pressure in Figure 2. The portion B C′ C of this curve is the dew point curve for the gas phase. The portion B C′ is the normal dew point curve and the portion C′ C is the retrograde dew point curve. The portion of the curve A C is the bubble point or saturation pressure curve for the liquid phase.

A mixture containing 1.8 mols of methane per mol of propane at a pressure of 91 atmospheres and a temperature of 31.1 C will exist as a single vapor phase. If the pressure is decreased, a liquid phase will appear and the gas phase will contain a smaller portion of propane. Thus, at a pressure of 80 atmospheres the gas phase will contain 2.04 mols of methane per mol of propane and a liquid phase will exist which will contain .71 mols of methane per mol of propane. A liquid phase will continue to exist until the pressure is dropped to 51 atmospheres. Below this pressure no liquid phase will exist.

Any mixture having a methane-propane ratio greater than 1.50 mols methane per mol of propane (this being the composition of the mixture whose critical temperature is 31.1° C.) will exist in the gas phase if it lies above C′ C or below B C′.

Figure 3 shows a similar plot for mixtures which are produced from condensate wells. The data shown in this figure was calculated from the results obtained by high pressure separation. The portion of the curve B C′ D is the dew point curve for the gas phase and the portion of the curve A E is the saturation pressure or bubble point curve for the liquid phase.

It will be observed that the gas phase becomes leaner in its heavier components as the pressure is increased up to approximately 1000 pounds per square inch. When the pressure is increased above this value, the gas phase will become richer. At a pressure of 3860 pounds, all of the liquids produced from this well will vaporize, the composition of the gas phase at this pressure being identical with the composition of the mixture produced from the well at the time the tests were made.

Above the pressure 3860 pounds

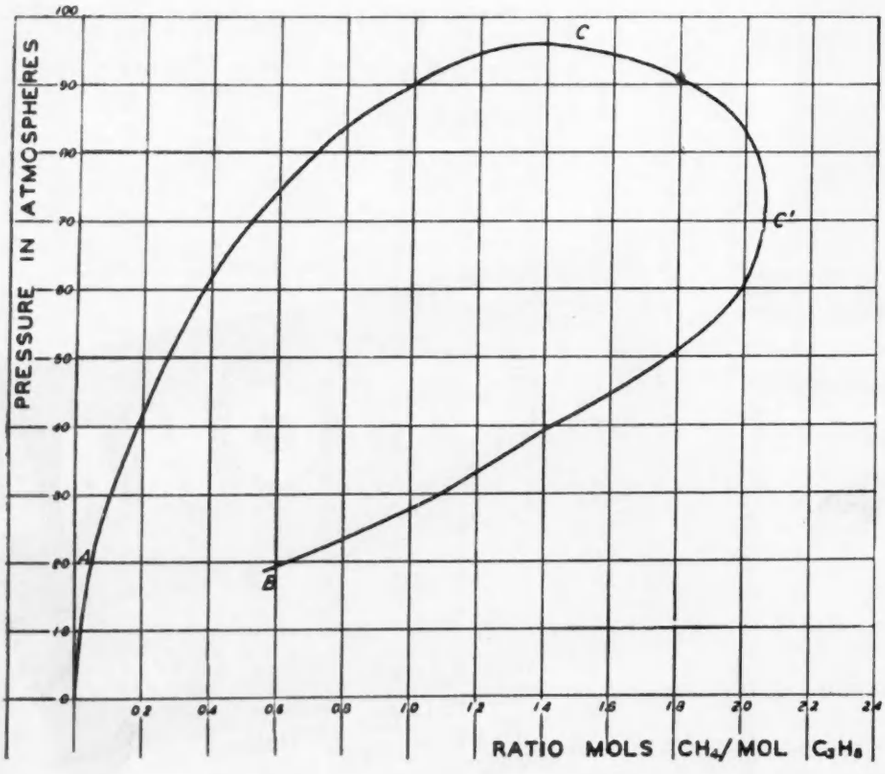
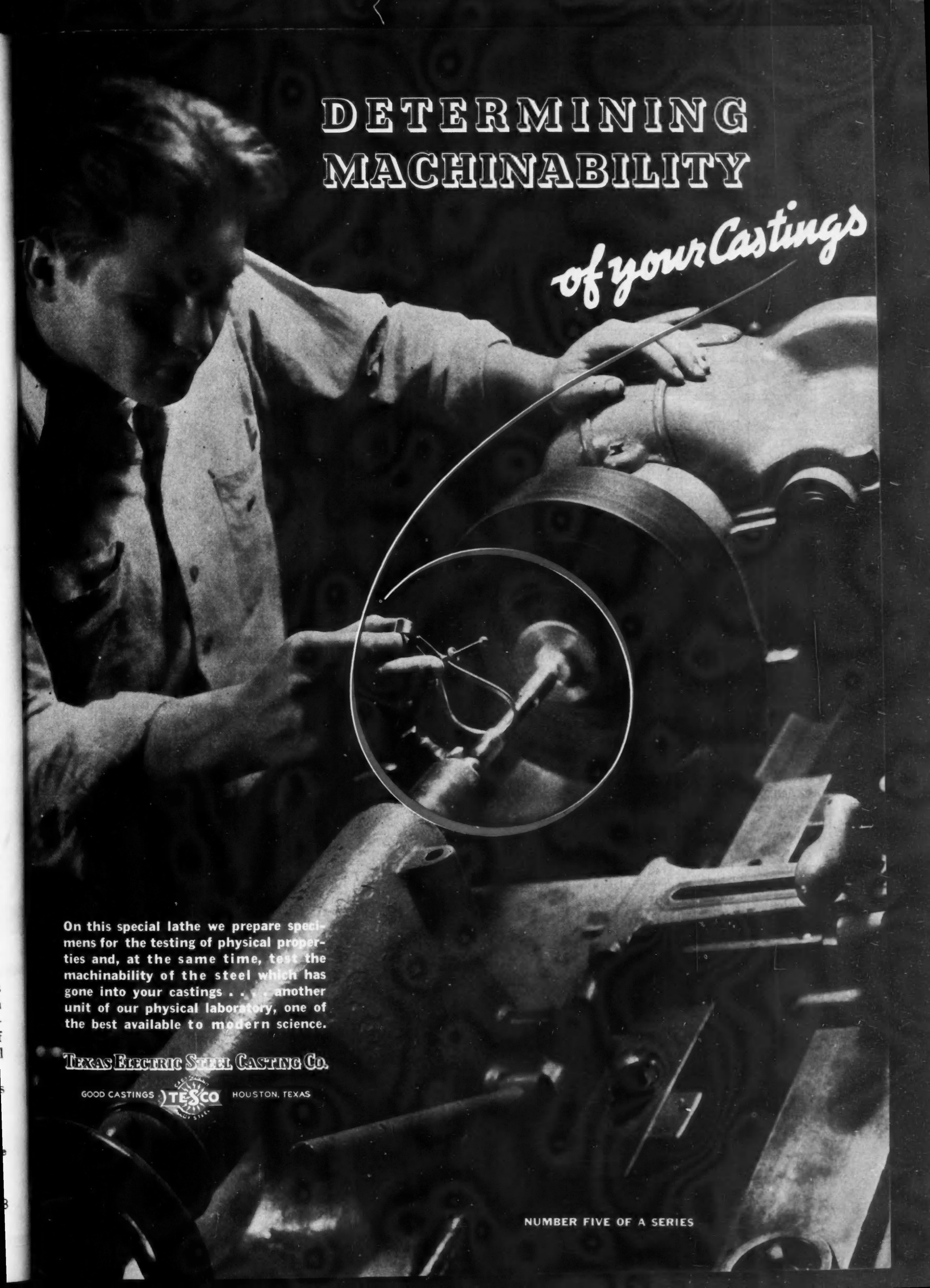


FIGURE 2

Pressure-Composition Curve Methane-Propane System. Constant Temperature —31.1° C.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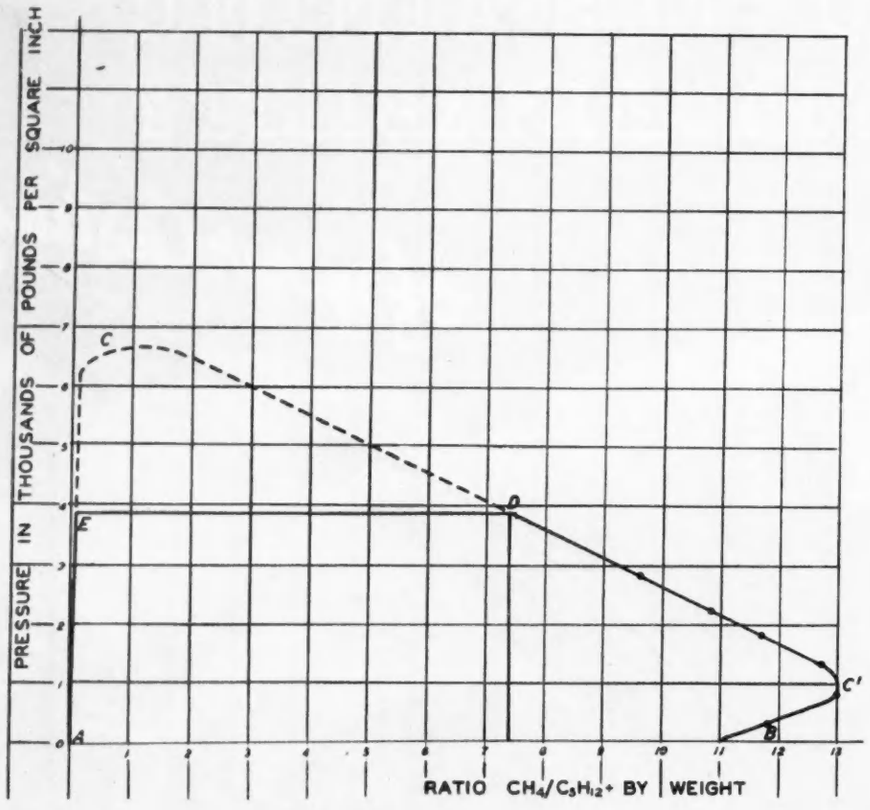

FIGURE 3

Pressure-Composition Curve for a Distillate Well at Reservoir Temperature

per square inch, a vapor phase only will exist for the mixture which was produced from this well. However, if mixtures having higher percentages of the heavier components were used, the dew point and bubble point curves would extend upward to some pressure which is represented on this drawing by C, the pressure C being the critical pressure for a mixture having a critical temperature equal to the reservoir temperature.

It will be observed that the range between the critical pressure C and the pressure of maximum condensation C' is much broader in the case of the materials produced from condensate wells than for the methane-propane mixture shown in Figure 2.

In general it has been found that the critical pressure will increase with increase in the molecular weight of the heavy ends in a mixture. Thus Katz and Singleterry found that the critical pressures for mixtures of natural gas and crude oil which contain heavy tars will be in the range of 25,000 pounds per square inch. They also found that solubilities in excess of 3000 cubic feet of gas per barrel of oil cannot be expected even at extremely high pressures. We may conclude that critical mixtures will not be found unless drilling depths are carried to around 50,000 feet and condensate pools having ratios in the order of 3000 cubic feet per barrel are discovered.

Observations which the writer has made in the field indicate that the critical pressures in general are much above the pressures existing in condensate reservoirs. This conclusion is based on the fact that the composition of the gas and liquid phases differ markedly from each other even when near reservoir pressure.

Figure 3 also illustrates another important fact regarding high pressure gas phase reservoirs. Thus, if the pressure of the mixture produced from this condensate well is decreased below 3860 pounds per square inch, a liquid phase will appear and the gas phase will become leaner. This will continue until a pressure of 1000 pounds per square inch is reached, after which the gas phase will become slightly richer. A considerable portion of the material which at the original pressure was in the gas phase will condense, wet the sand grains, and be left behind while the gas phase only is being produced. A large portion of this liquid will be rendered non-recoverable.

Figure 6 shows the gravity of the liquid phase which separates as the pressure is decreased. It will be observed the gravity of the liquid phase at reservoir temperature will be 40.5° A.P.I. This is the approximate gravity of the "dark" oil which is produced in this field. In condensate fields which are the gas caps of oil fields, an infinitesimal quantity of a liquid phase will condense with the first infinitesimal drop in pressure. This first liquid which condenses will

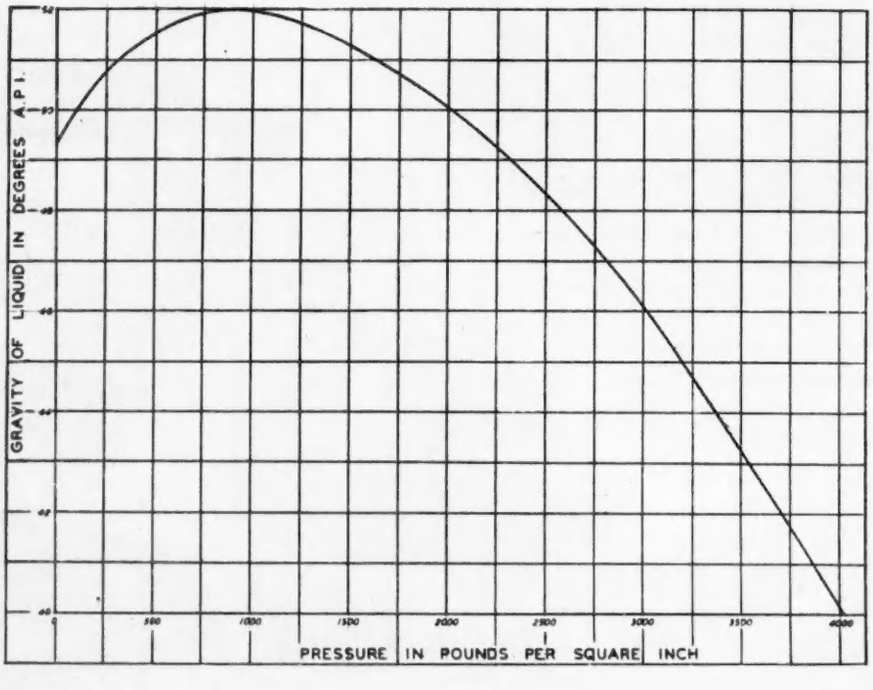

FIGURE 6

Gravity-Pressure Curve for a Condensate Well at Reservoir Temperature.

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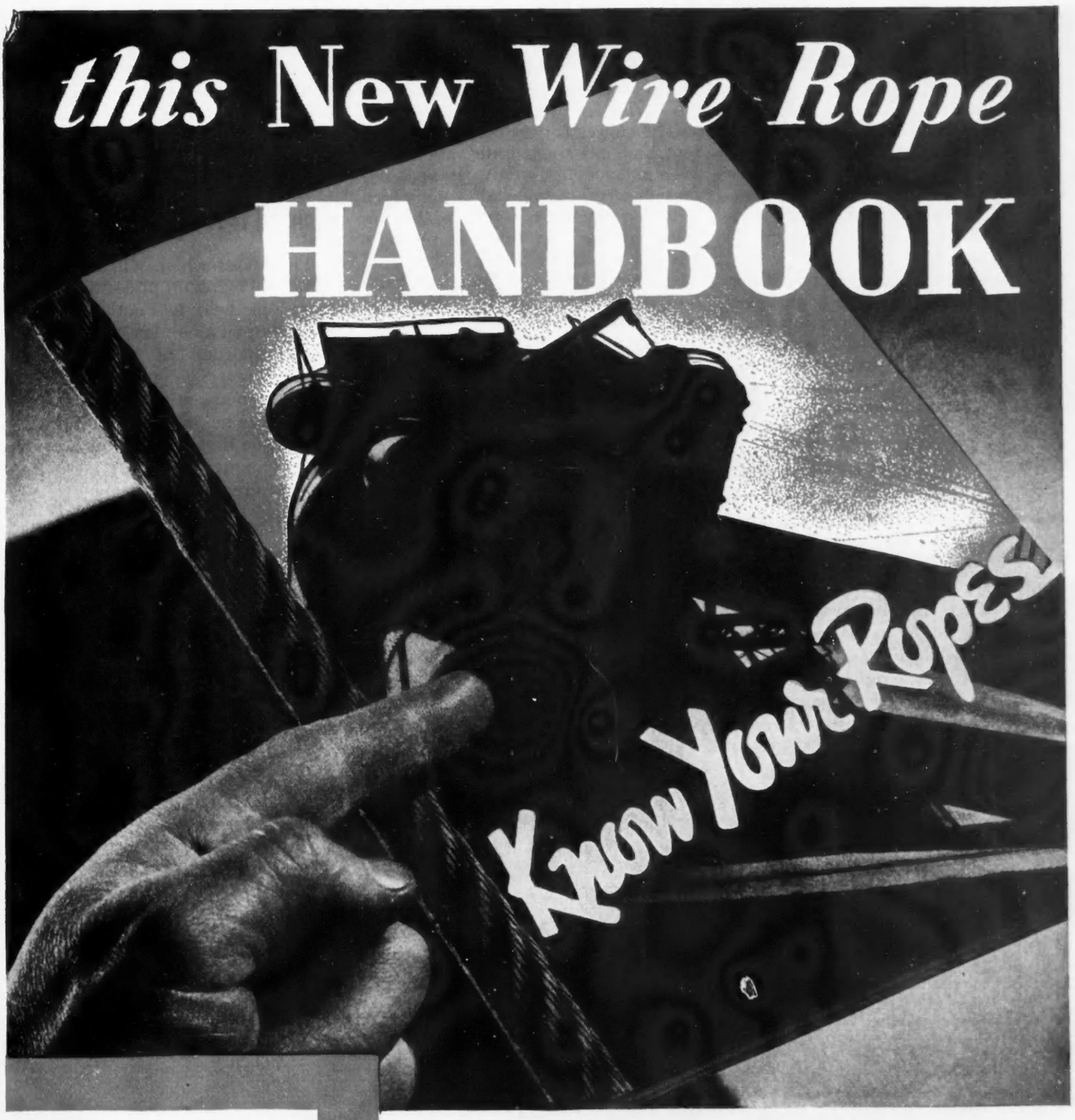

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have a composition identical with the crude oil which was in equilibrium with the gas phase and will contain a much higher percent of higher boiling components than are present in the condensable material in the gas phase. As the pressure decreases the liquid which condenses will contain a decreasing percent of heavier components. Since the liquid which condenses at high pressures is composed largely of high molecular weight compounds, only a fraction of it can be recovered by recycling at lower pressures and a large portion of it will be non-recoverable. Hence, failure to maintain the pressures of condensate fields of this type at their original values until substantially all their liquid content has been extracted will result in a waste of their liquid hydrocarbons.

This behavior of high pressure condensate reservoirs is well illustrated by data which have been collected on the La Blanca field. Frequent tests have been taken in this field in which the pressures and gas-condensate ratios have been determined. This data has been plotted in Figure 9. It will be observed that the condensate content of the gas at 3800 pounds per square inch was 9 barrels per million cubic feet. The pressure has now declined to approximately 2180 pounds per square inch and the condensate content of the gas produced has declined because of retrograde condensation to approximately 2.6 barrels per million cubic feet.

The curves for the condensate content and gas-condensate ratios have been extrapolated to give an approximation of the amount of liquid which will be rendered non-recoverable because of the fact that the pressure has not been maintained in this field. The area above the condensate content curve is a measure of the total volume of liquid rendered non-recoverable and the area below the curve is a measure of the volume of liquid which could be recoverable under the system of production which is being used.

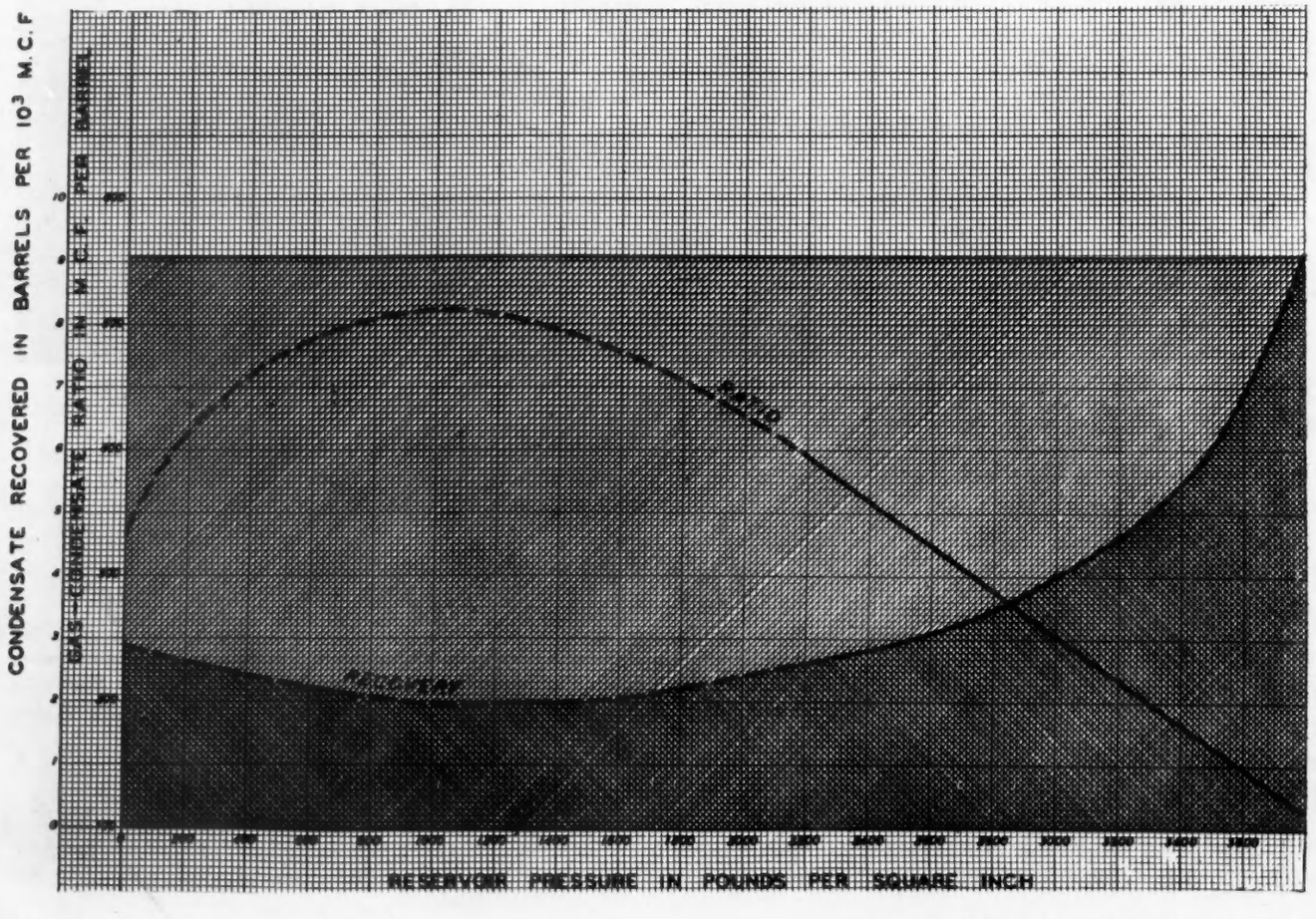
From this curve it is estimated that approximately 65 percent of the liquid content of the gas at a pressure of 3800 pounds per square inch will condense and remain behind in the reservoir because of failure to maintain the pressure at 3800 pounds per square inch.

The waste which has occurred throughout the history of this field is considerably greater than has been indicated by these calculations since the original reservoir pressure in the field was approximately 4200 pounds per square inch and the original condensate content of the gas produced approximately 18 barrels per million cubic feet. On this basis the loss due to retrograde condensation will be about 82 percent of the original content.

The losses which will result from failure to maintain pressure will vary from one field to another and will depend upon a number of factors, the most important of which are the original reservoir pressure and the original composition of the gas. As condensate fields are found at greater depths and higher reservoir pressures are encountered, these losses will become greater.

FIGURE 9

La Blanca Field Reservoir Pressure-Composition Curves.


CONDENSATE RECOVERED IN BARRELS PER 10³ M.C.F
GAS-CONDENSATE RATIO IN M.C.F. PER BARREL
RATIO
RECOVERY
RESERVOIR PRESSURE IN POUNDS PER SQUARE INCH

Bibliography

[1] Sage, Lacey and Schaafsma: A.P.I. Production Bulletin No. 212, p. 119 (Chicago Meeting, October, 1933).

[2] Kay: Industrial and Engineering Chemistry 30, p. 459 (1933).

[3] Katz and Hachmuth: Industrial and Engineering Chemistry 29, p. 1072 (1937).

[4] Katz and Singleterry: A.I.M.E. Technical Publication No. 971 (San Antonio Meeting, October, 1938).

[5] House Bill No. 266, Forty-fourth Legislature of Texas, Regular Session (1935).

[6] *Clymore Production Company, et al, vs. E. O. Thompson, et al:* No. 517, In Equity, U. S. District Court for Western District of Texas, Austin, Texas.

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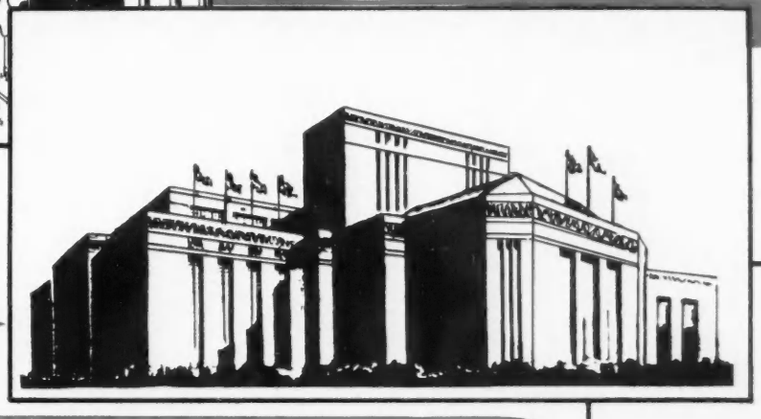

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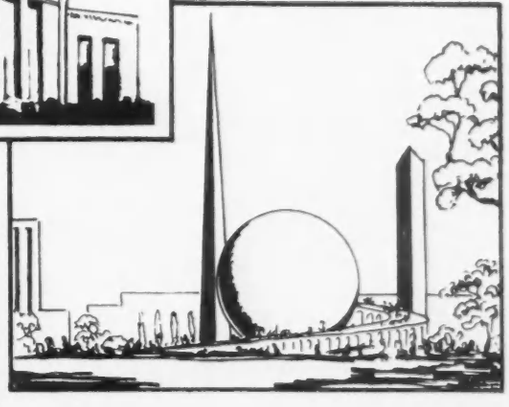

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A SURVEY OF THE

Cementing Jobs to Shut-off Salt Water

IN EAST TEXAS FIELD

Presented to the East Texas Chapter of the American Petroleum Institute's Division of Production at Kilgore, Texas, on December 6, 1938.

By PHIL MONTGOMERY, District Engineer,
Halliburton Oil Well Cementing Company

A SURVEY of the East Texas oil field shows that cementing job used to shut-off salt water may be classified into four groups with a total of 12 different types (or methods) as follows:

Group 1: Straight plug-back job, of which there are two types.
Group 2: Braden-head squeeze job, of which there are three types.
Group 3: Retainer squeeze job, of which there are four types.
Group 4: Short string cement job, of which there are three types.

Group 1: Straight Plug-Back Job

Type 1: Where a straight plug-back job is used and the cement plug is cut off below the top of the oil sand.

The tubing is run to the bottom of the well, then raised a few inches, enough for the well to circulate free. The cement is then mixed and pumped into the tubing. This is followed up with a measured amount of fluid to equalize the cement in the bottom of the hole. Next the tubing is raised and the cement plug is cut off below the top of the oil sand and the excess cement is washed out. All the pressure that is used is the pressure that is required to pump the cement down the tubing and to wash out the excess cement. Some operators prefer, after the excess cement has been washed out, to raise the bottom of the tubing up into the casing and to leave the well closed in under pressure. After the cement has set, all that is necessary to do is to run the tubing back to the bottom and bring the well in, as the top of the oil sand has been left exposed. It is necessary to know where the top of the oil sand is, either from the core log of the well or by using an electric logging device. This type job has been used by operators in this field who have made a practice of plugging back their wells just as soon as they start making salt water. Some very good results have been obtained using this type of job on wells making a very small percentage of salt water.

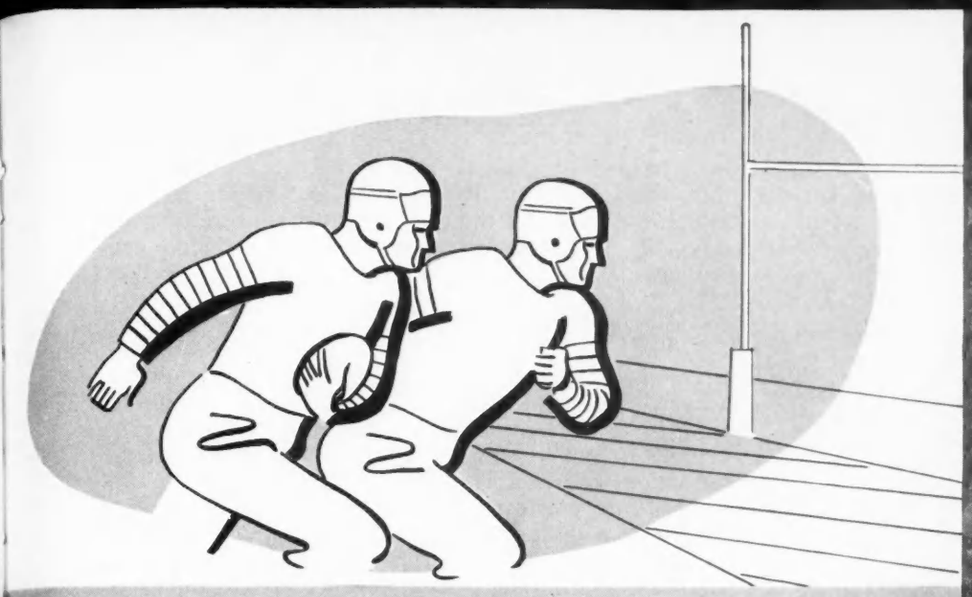
Type 2: Where a straight plug-back job is used and the top of the cement plug is cut off up in the casing.

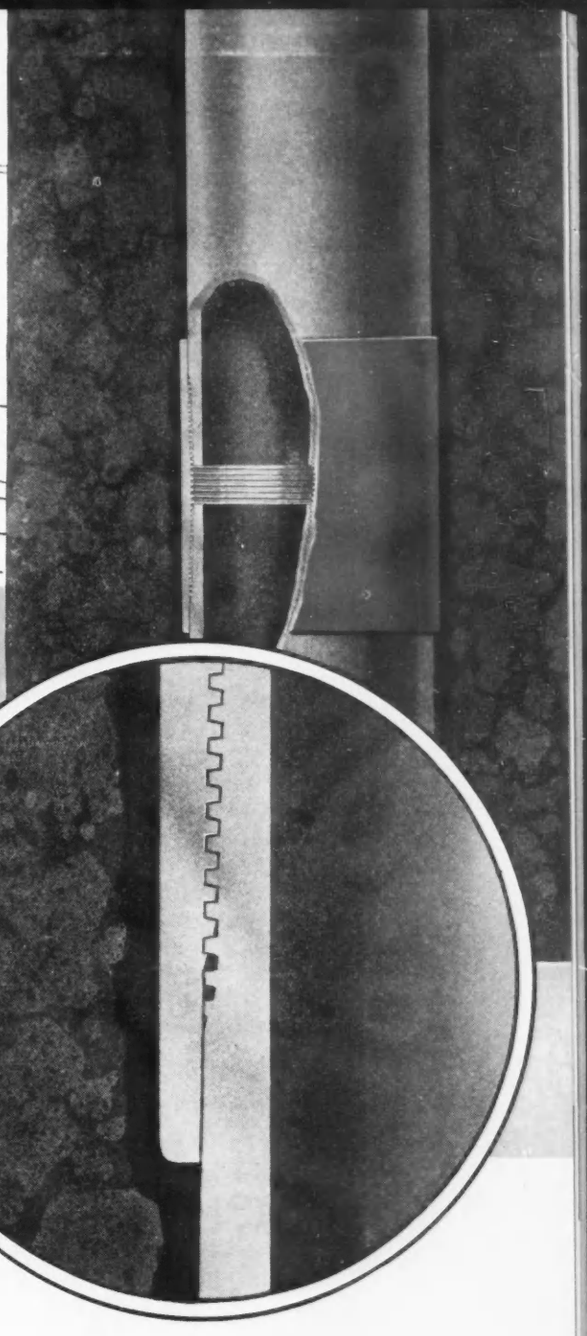
The cement is equalized in the bottom of the well. The bottom of the tubing is raised up in the casing, the cement plug is cut off up in the casing, and the excess cement is washed out. Some operators prefer to do this type job and drill the well in dry, using cable tools and taking only six to twelve inches of the producing formation. Some use this type job on wells that they claim are producing from the break between the Austin chalk and the Woodbine sand.

Group 2: Braden-Head Squeeze Job

Type 1: Where the top of the cement plug is cut off below the top of the oil sand.

On this type job, it is necessary to know the depth of the top of the oil sand. After the cement has been equalized in the bottom of the well, the bottom of the tubing is raised and the cement plug is cut off below the top of the oil sand and the excess cement is washed out. The tubing is then raised up into the casing and the pressure is put on the well and closed in. This leaves the cement plug to set under pressure. On this type job the pressure is usually run up from 500 to 800 pounds and has been found to be very successful in wells making a small percentage of salt water. The well is then





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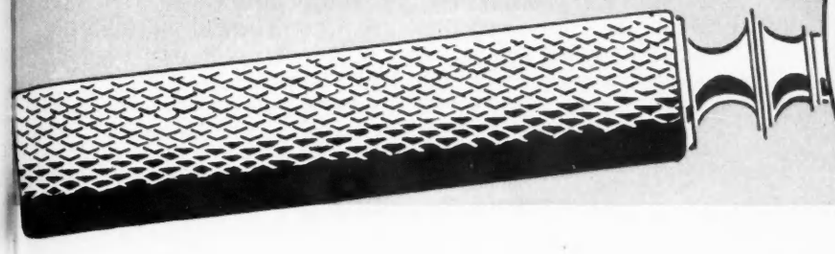

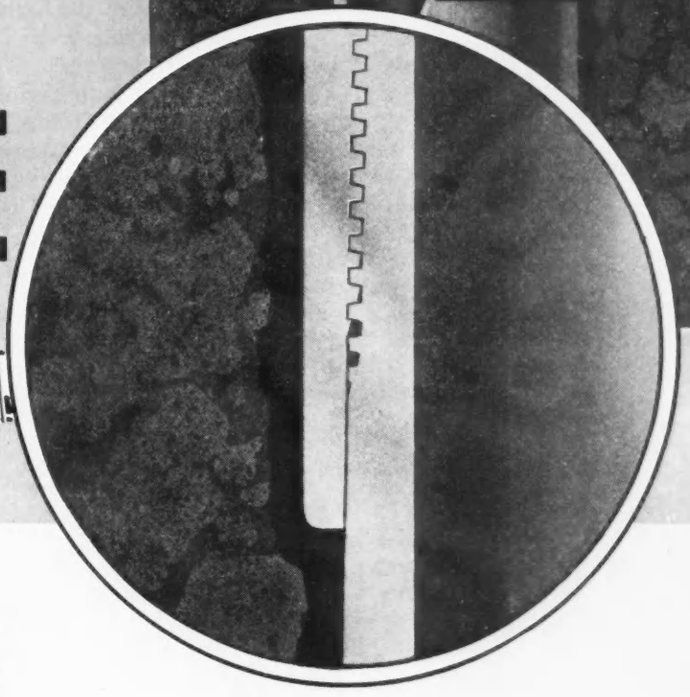

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brought back in by running the tubing back to bottom as the top of the sand is left exposed. Some operators, in doing this type job, prefer to close in the casing as the cement starts out of the tubing and squeeze some cement into the salt water sand, then release the pressure and go ahead and finish the job the same as described above.

Type 2: Braden-head squeeze job, where the top of the cement plug is left extended up into the casing after cement has been squeezed into the formation.

On this type job, enough cement is run and equalized in the bottom of the well to fill the open hole and usually 150 feet up in the casing. The tubing is then raised 100 feet up in the casing and the cement above this point is washed out. The tubing is then raised another 100 feet. The casing is closed, and, using a measurement on the fluid pumped into the tubing, a part of the cement that is in the bottom of the casing is pumped into the formation, usually leaving from 20 to 30 feet of cement in the bottom of the casing. The well is then closed in and the cement sets under pressure. In some cases the operator, after the cement has been squeezed in formation, releases the pressure and drops back in the cement and cuts the cement plug off below the top of the oil sand. This is done by reversing circulation as the tubing is being lowered in cement. After the cement plug is cut off, the tubing is raised up in the casing and the well is closed in under pressure. The amount of pressure used on this type job depends upon the casing, as all the pressure that is applied on the cement is on the casing. This type of job has been very successful on wells making a small percentage of salt water.

Type 3: Braden-head squeeze job, where the cement is pumped under pressure and the excess is pumped out through an adjustable flow bean.

The tubing is run to within 20 or 30 feet of the bottom of the casing. On this type job, the formation is broken down with water, and the cement is pumped in under pressure in order to hold the water in the formation. The amount of pressure used on this type job to pump cement in formation depends upon the strength of the casing as all the pressure is on the casing. Next, the excess cement is washed out under pressure through an adjustable flow bean. The tubing is raised again under pressure and the well is then closed in under pressure. After the cement has set, it is drilled out down to the top of the sand to bring the well back in. It is common practice in this field to wash the well with water. By doing this, a part of the sand remains in suspension between the tubing and casing. For this reason it makes this a very hard job to do under the conditions which we have to work in this field. On this job it would be better to wash the well with mud. This idea should be kept in mind on any type of Braden-head squeeze job.

It is almost necessary to have a slip type head in order to do this type job. There have been only a few of these jobs in the East Texas field.

Group 3: Retainer Squeeze Job

A cement retainer consisting of a rubber packing assembly with a back pressure valve at the bottom is used to keep the pressure off the casing and to hold the pressure on the formation. The retainer is made of drillable material. It is run into the well on a circulating joint, which in turn is connected to the tubing or the drill pipe. The circulating joint is connected to the retainer with left-handed threads. After the squeeze job, the circulating joint is backed off in the left-hand threads and the circulating joint and tubing or drill pipe is pulled out of the well. Retainer squeeze jobs are especially recommended in wells making a high percentage of salt water and wells with a thin sand section.

Type 1: Retainer squeeze job, where the production string is cemented above the oil sand.

This is the most common type job used to shut off salt water in this field. The cement retainer is usually set from 10 to 20 feet up in the casing, and it is common practice to pump from 5 to 10 barrels of water into the formation. This is followed with cement, and cement is pumped into the formation until a pump pressure of at least 3000 pounds is reached. A high pump pressure is necessary where the well is making a high percentage of salt water. After the cement has set, the retainer and cement down to top of oil sand is drilled out, usually with cable tools.

Type 2: Retainer squeeze job using tail pipe, where the production string is cemented above the oil sand.

This is the same type job as Type 1, with the exception that the tail pipe is connected on the bottom of the retainer and usually extends to within one or two feet of the bottom of the well. This makes the passage of the cement into the open hole originate at the bottom of the well. This is particularly important where there is a caving formation below the string of casing. The tail pipe is also used to insure a uniform mass of cement with uniform pressure for the entire distance of the volume of cement from the bottom up. The tail pipe is drillable material, being either aluminum, cast iron or securaloy. After the cement has set, the retainer, cement and tail pipe are drilled down to the top of the oil sand. In most cases in this field this is done with cable tools, and drilled in dry.

Type 3: Retainer squeeze jobs cementing through shot holes.

This type squeeze job is used on wells where the production string is set all the way through the oil producing formation and the operator wishes to cement off shot holes and produce from a higher point in the oil sand. On this type job, the retainer is set within one or two feet above the top of the shot holes, from 5 to 10 barrels of water pumped into the salt water sand, and this is followed up with cement. Cement is squeezed into the formation until usually 3000 pounds pump pressure has been reached. To bring the well back in, sometimes the retainer is drilled out and the well perforated in the upper part of the old shot hole section. In some cases the retainer is left in the hole and the well is completed by gun perforating above the retainer. This method can also be used in a well where a short string has been cemented in the bottom of the hole. This allows the operator to produce the oil from the oil producing formation from the bottom up, rather than from the top down.

Type 4: Retainer squeeze job cementing through a perforated liner or cementing off salt water in a well where a full hole cementer has been used.

On this type job the retainer is set above the perforated liner, where there is a liner in the hole, or in a case where a full hole cementer has been used in the oil string the retainer is set above the full hole cementer. Water is then pumped in the formation and this is followed up with cement. The pressure used is usually the same as other retainer squeeze jobs. Cement is squeezed into the formation until the pump pressure reaches 3000 pounds. After the cement has set, the retainer is drilled

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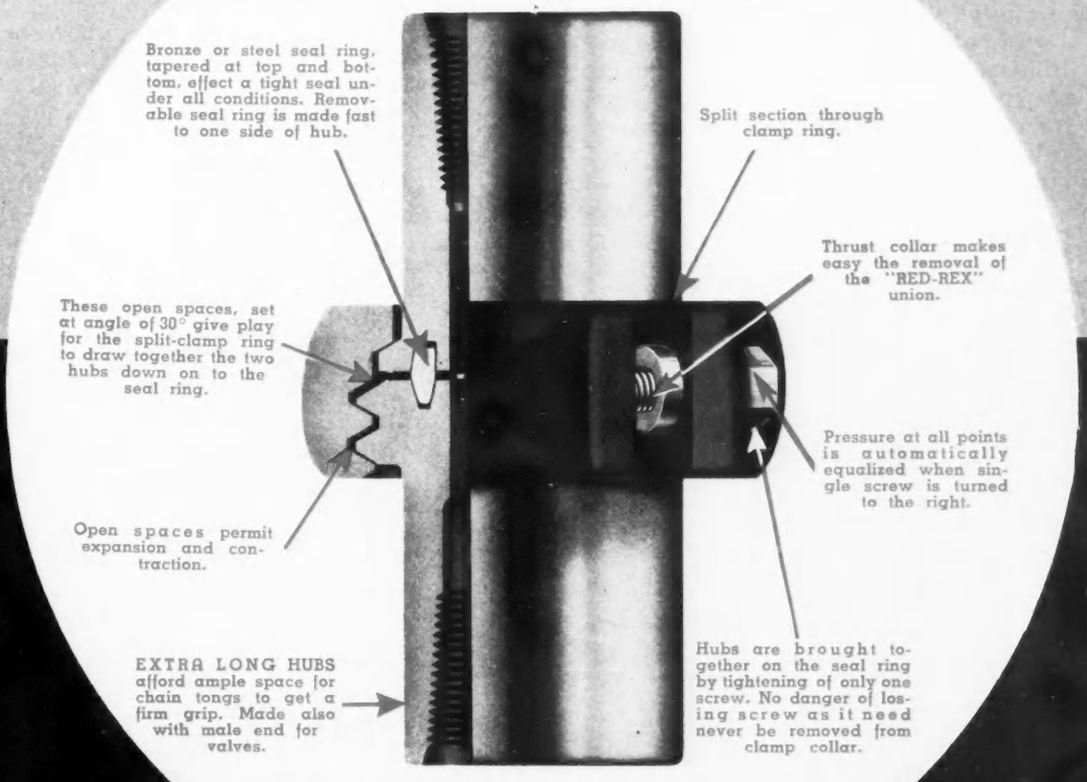
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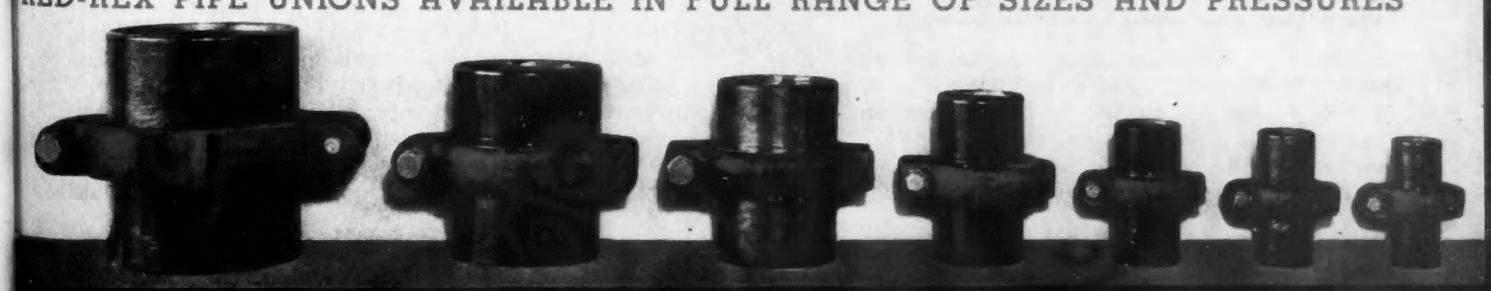

out of the perforated liner down to the oil sand. In some cases in this field where this type job is used, the wells come in after the cement has been drilled down to the oil sand without gun perforating. One operator in this field has used this type job on six wells in which full hole cementers were used. All six of these wells were drilled in with cable tools and it was not necessary to gun perforate the perforated liner to bring them back in. All six of these wells made pipe line oil. However, in other cases it was necessary on this type job to gun perforate in order to bring the well back in. If the operator had a problem that called for tail pipe, it could be used on this type job.

Group 4: Short String Cement Job

During the last two years considerable progress has been made in using a setting tool which allows the operator to use a wash pipe to the bottom of the short string. At the present time two types of these tools are on the market. The first type connects to top of the liners and has a wash pipe that extends to the anchor shoe. After the cement job is over, the setting tool is backed off from the short string. In some cases where a packer is used on the short string, the weight of the tubing or drill pipe collapses the packer after the setting tool has been backed off. The second type setting tool is the type that screws in the bottom of the short string or in the anchor shoe. On this type tool the short string is made up with anchor shoe on the bottom. The tubing or drill pipe is then run in the short string and the setting tool is screwed into the anchor shoe. On this type tool the short string is equipped with a rubber centralizer to hold the tubing or drill pipe in place at the top of the short string. In both cases, after the cement job has been completed, the cement is held back of the short string by a back pressure valve in the anchor shoe. All the cement that is left in the tubing or drill pipe and in the inside of the short string and above the short string is then washed out, as this wash pipe extends all the way down to the anchor shoe. This eliminates a drilling out job after the cement job has been completed. It is also possible to swing a short string off bottom and cement it. This is done by using a setting tool built with a liner hanger. This type tool has been used only a few times in this field.

Type 1: Where short string is used to cement off a heaving formation between the bottom of the casing and the top of the oil sand.

Some places in this field the break between the Austin chalk and the Woodbine sand gives considerable trouble by heaving in and bridging off the well. This problem has been overcome by cementing a short string in the bottom of the well, which extends from the bottom of the hole and has an overlap up into the oil string. This short string is run in on tubing or drill pipe with setting tool using wash pipe. The short string is cemented and all excess cement washed out of short string and out of the casing. After the cement has set the well is brought back in by gun perforating. This type job has also been successful on wells making a small percentage of salt water.

Type 2: Short string squeeze job using braden-head.

This type job is used to cement off salt water above or below the oil producing formation. Most operators prefer to run an electric logging device on the well before doing this type job. It is common practice to underream the hole and then run the short string to bottom on either drill pipe or tubing, using a setting tool with a wash pipe. After cement has been pumped up around the short string the casing is closed and cement is pumped into the formation. The pressure is then released and the cement is washed out of the short string and out of the casing. The well is brought in by gun perforating the short string. This type is especially recommended for wells making a high percentage of salt water, providing the casing will stand a high pressure squeeze job. By this type job it is possible to produce the oil out of a lower section of the oil sand, then squeeze this section and produce from a higher section.

Type 3: Short string squeeze job using a special tool to keep the pressure off the casing.

To date there has been only one job done like this. It is an entirely new type for this field. This special tool used a wash pipe extending to the bottom of the short string and after cement was pumped up around the short string the tool was backed off from the top of short string, and by letting the weight of the drill pipe down on the tool the packer was collapsed and was held down by a set of hold-down slips. On the wash pipe in the short string there is a second packer which allows the operator to pump cement down through the tubing or drill pipe and out through the anchor shoe and into the salt water section without applying pump pressure on the casing. This pressure is held on the formation by the packer between the short string and the production string and by the back pressure valve in the bottom of the anchor shoe. The pressure in the tubing or drill pipe is then released and the packer on the inside of the short string is pulled up above the top of the short string and the cement is washed out of the casing and the short string. This particular well used a pump pressure of 1900 pounds. The job was successful.

Types of Cement

The cement used in doing the different type jobs to shut off salt water in the East Texas field is, in almost every case, slow setting cement. During the last eight months there has been considerable progress made in gel-forming cements or East Texas cement, as they are sometimes called by the cement industry. On March 30, 1937, I made a report at a meeting of the East Texas Engineering Association, and the operators in the East Texas field, on "The Different Methods of Plugging Back Wells in the East Texas Field." At that time we were not able to pump very much cement back into the formation in the Kilgore-Longview districts, and it was very noticeable that in wells in the south end of the field, or the Henderson district, we were able to pump large quantities of cement into the formation with much less pressure than in the north end of the field. By the last part of 1937 this condition was the same in the north end of the field as it was in the south end, and in only about 25 percent of the jobs were we able to make the pressure go up to 3000 pounds, which proved to be the pressure that gave the best results in wells making a high percentage of salt water. Also blank places were found in cement below the casing, which indicated that the cement had moved after being placed.

On February 21, 1938, the first gel-forming cement was used in the East Texas field. This was standard slow-set cement with 2½ pounds of bentonite colloidal per sack of cement. Immediately another cement company came out with bentonite colloidal in their slow-set cement. A third company came out with a gel-forming cement, which was ground very much finer than their standard slow-set cement. A fourth company came out

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with a finely ground cement which contained an admixture to make it gel. All four of these are slow setting cements. At the present time over 80 percent of the cement used in shutting off salt water in the East Texas field is slow setting gel-forming.

These cements are pumped into the formation the same as on any other squeeze job. When all the cement but the last 30 sacks has been pumped out of the tubing and the pressure is not up to the desired pressure of 3000 pounds the pump is shut down. By giving these new gel-forming cements a five minute shut down period, the cement starts to gel, due to the high gel-strength of these cements; this in turn causes a resistance to passage through the salt water sand. The pump is started again and usually five more sacks of cement are pumped into the formation. If the pressure does not then go up to the desired point, the pump is shut down for another five minute period. Usually after the second or third shut-down period when the pump is started again the pressure will go up to 3000 pounds and in most cases remain there. The job is then the same as any other squeeze job. The pressure is released. In the case of a retainer job the tubing is backed off. Next, the excess cement is washed out.

These short shut-down periods are during the initial setting time of the cement. In gel-forming cements the angle of repose is considerably higher than that of standard slow-set cements. These cements, due to the gel action, do not flow after being placed. This has eliminated finding blank places in cement below casing. This has greatly increased the results of our squeeze work in the East Texas field.

Conclusions

1. There is no one type of job that can be recommended for any and all wells; the one best adapted depends upon the condition within the particular well.

2. On wells making a high percentage of salt water, the most successful jobs have been the retainer squeeze and the short string squeeze jobs.

3. Because of light weight casing used in this field, the retainer squeeze job will probably be the most used.

4. Where the cement job is done shortly after the well starts making salt water and making only a small percentage of salt water, there have been some very successful jobs done by using a braden-head squeeze job.

5. So far, in this field, we do not know how long these jobs will last, but judging from experience we have had in other fields, the high pressure squeeze jobs will be much more permanent.

6. The slow setting gel-forming cements have proved to be one of the biggest steps that has been made in improving the method of shutting off salt water in the East Texas field.

7. It is beyond argument that bottom-hole encroachment or intrusion of salt water in the great East Texas field is a problem of paramount importance. It can not be denied that the loss of reservoir pressure, excessive pumping loads, the increased corrosiveness, the cost of oil treatment and salt water disposal hastens the time of abandonment of many wells and materially decreases the ultimate oil recovery. Experience leads to the conclusion that much of this economic loss is preventable by proper cementing.

Acknowledgment

The author has used information from the report "Plug Back Work in the East Texas Field," by R. H. Maples, Cities Service Oil Company, and F. J. Mikeska, Gulf Oil Corporation, presented at the East Texas Chapter of the American Petroleum Institute, Kilgore, Texas, October 5, 1937. (Published in THE OIL WEEKLY, October 11, 1937.)

This survey was made possible through the cooperation of W. H. Baker, division superintendent, East Texas division; Hobson Buie, superintendent, Henderson district; Fred Whitten, superintendent, Longview district; and Harry Conray, superintendent, Kilgore district, all of Halliburton Oil Well Cementing Company.

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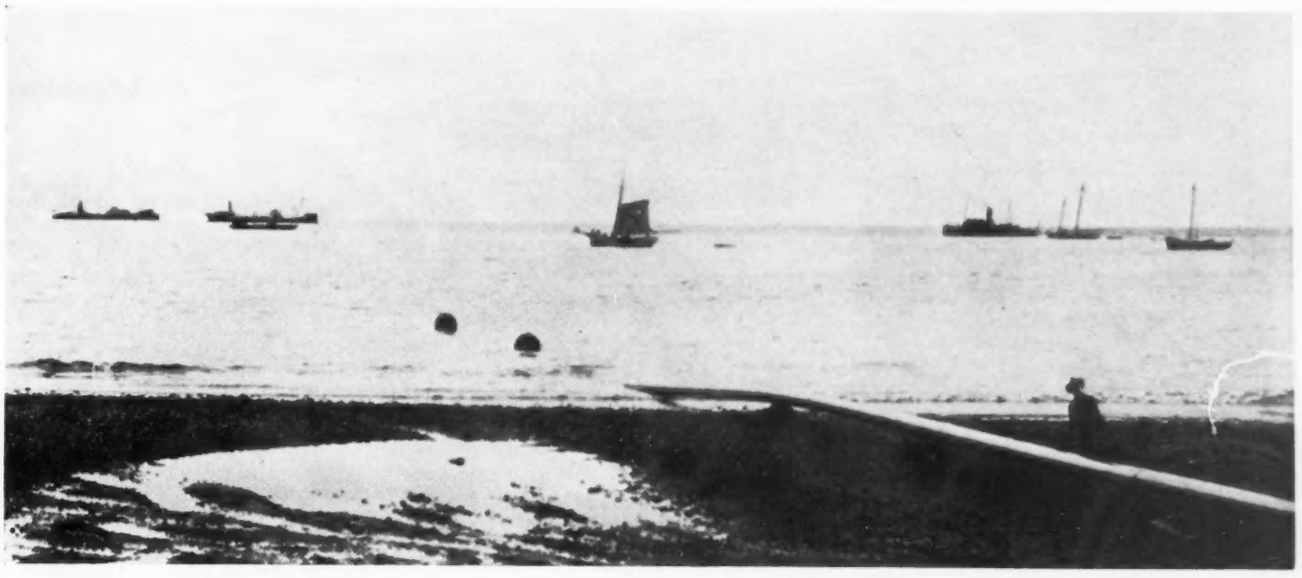


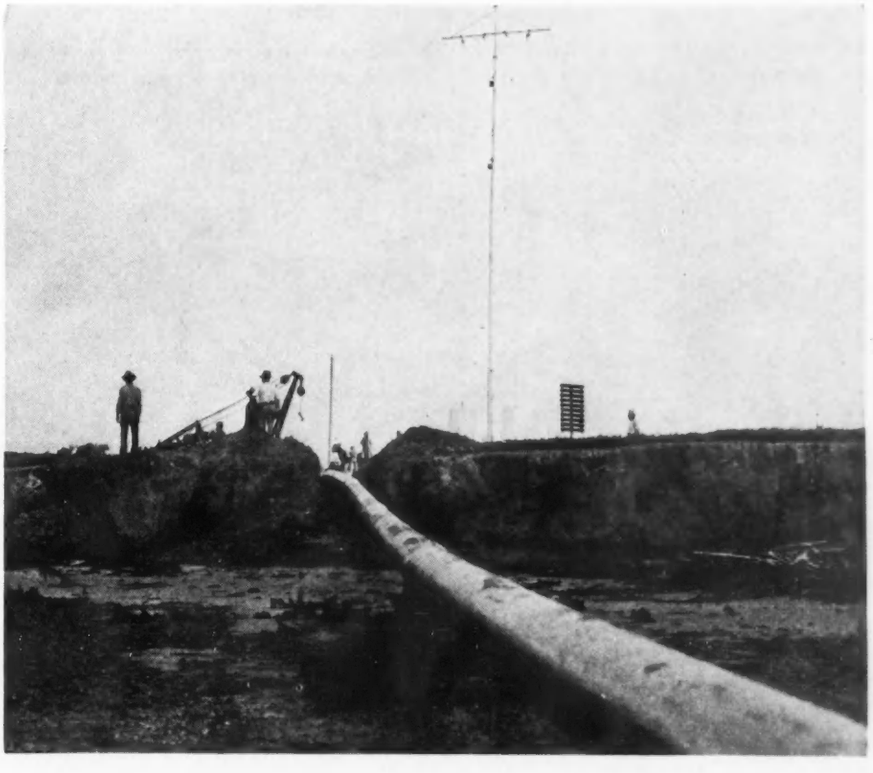
Pulling Venezuela Loading Line Out to Sea

By WILLIAM V. GROSS, Foreign Editor

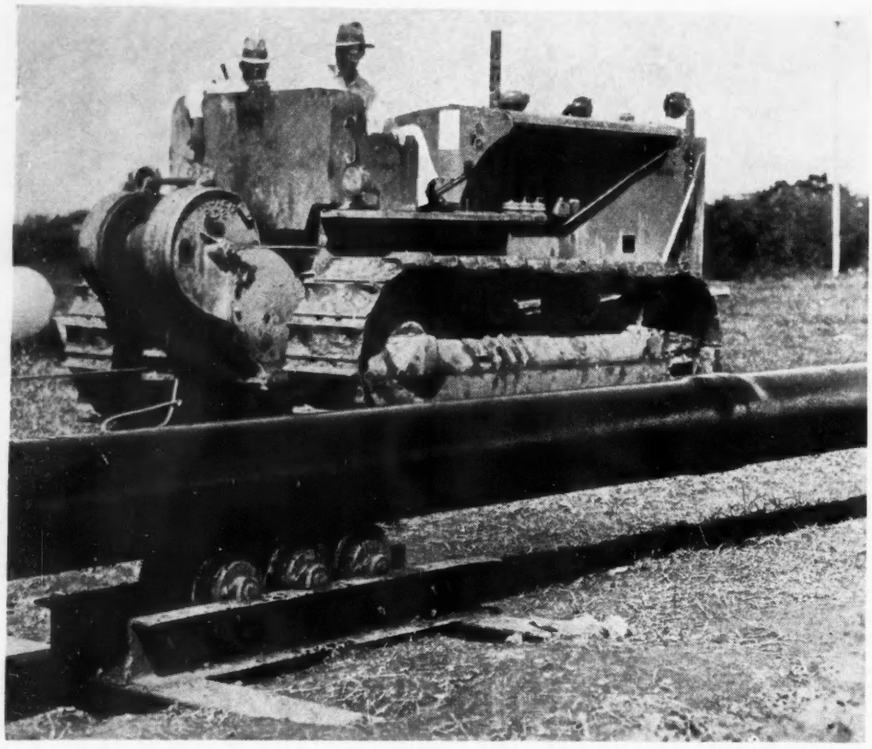
ENGINEERS of Standard Oil Company of Venezuela arranged a method whereby 3300 feet of sea-loading line was pulled out to sea in 25 minutes. The installation was a replacement at the company's terminal at Guiria on the Sucre peninsula.

The feat was unusual not only for the rapidity with which it was accomplished, but also for the fact that the pulling of the line out to sea was done from shore and did not utilize a tanker or tugs, a common practice which has always been expensive and slower.

Pipe used for the new line was 14-inch O.D., double bell and chill



At right—The line ready to be pulled. Above shows two buoys that were tied to the end of the pipe to show its progress and to locate it for hoisting at the seaward end.



Pull of the tractor was parallel in the opposite direction. This picture also shows the three-roller arrangement near the edge of the cliff.

ring pipe. Instead of the usual three beads, four were run on each weld as a precautionary measure, a No. 5 rod having been used for the welding.

In preparation for welding the pipe together ashore, a number of special carriers were fabricated. These consisted of old tractor rollers mounted on and welded to frames made up of railroad rails which had been condemned for use on the narrow gauge road used by the company. On top of two rails parallel to each other were welded two other rails, also parallel to each other but vertical to the first two. The roller shaft rested on the two top rails, an arrangement which allowed plenty of clearance between the pipe and the ground. The rollers thus constructed were placed about 100 feet apart, and as the line was welded it was placed on them with a side boom tractor.

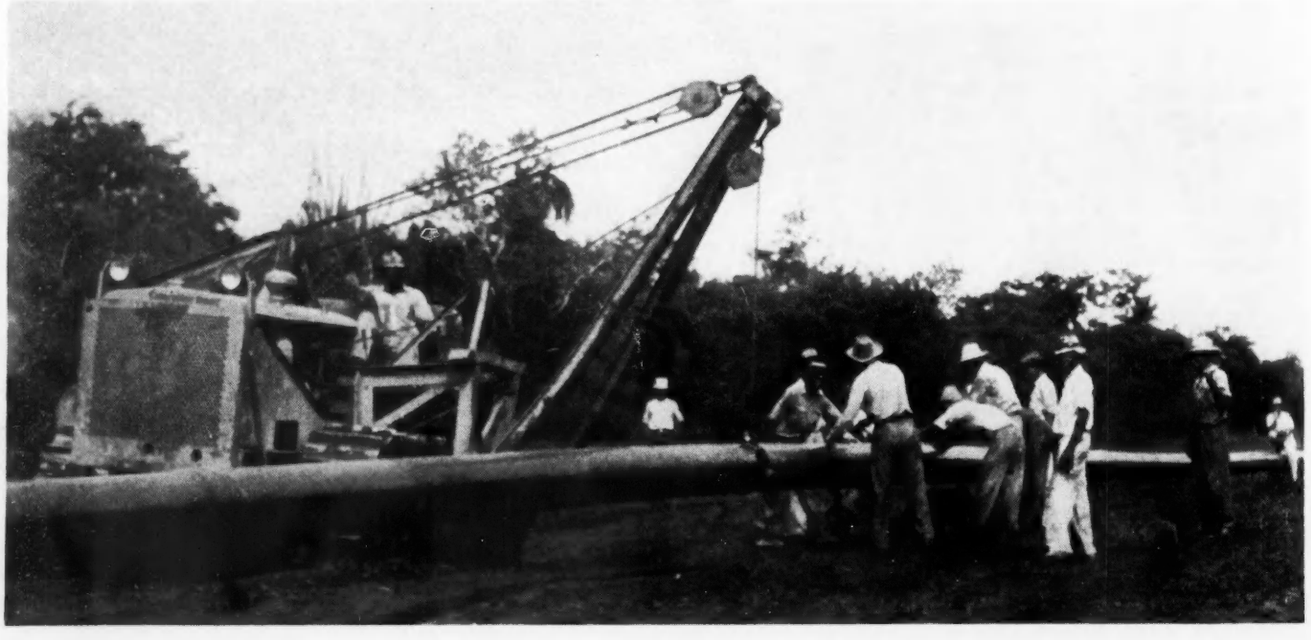
A side-boom tractor was used to place the welded string on the rollers.

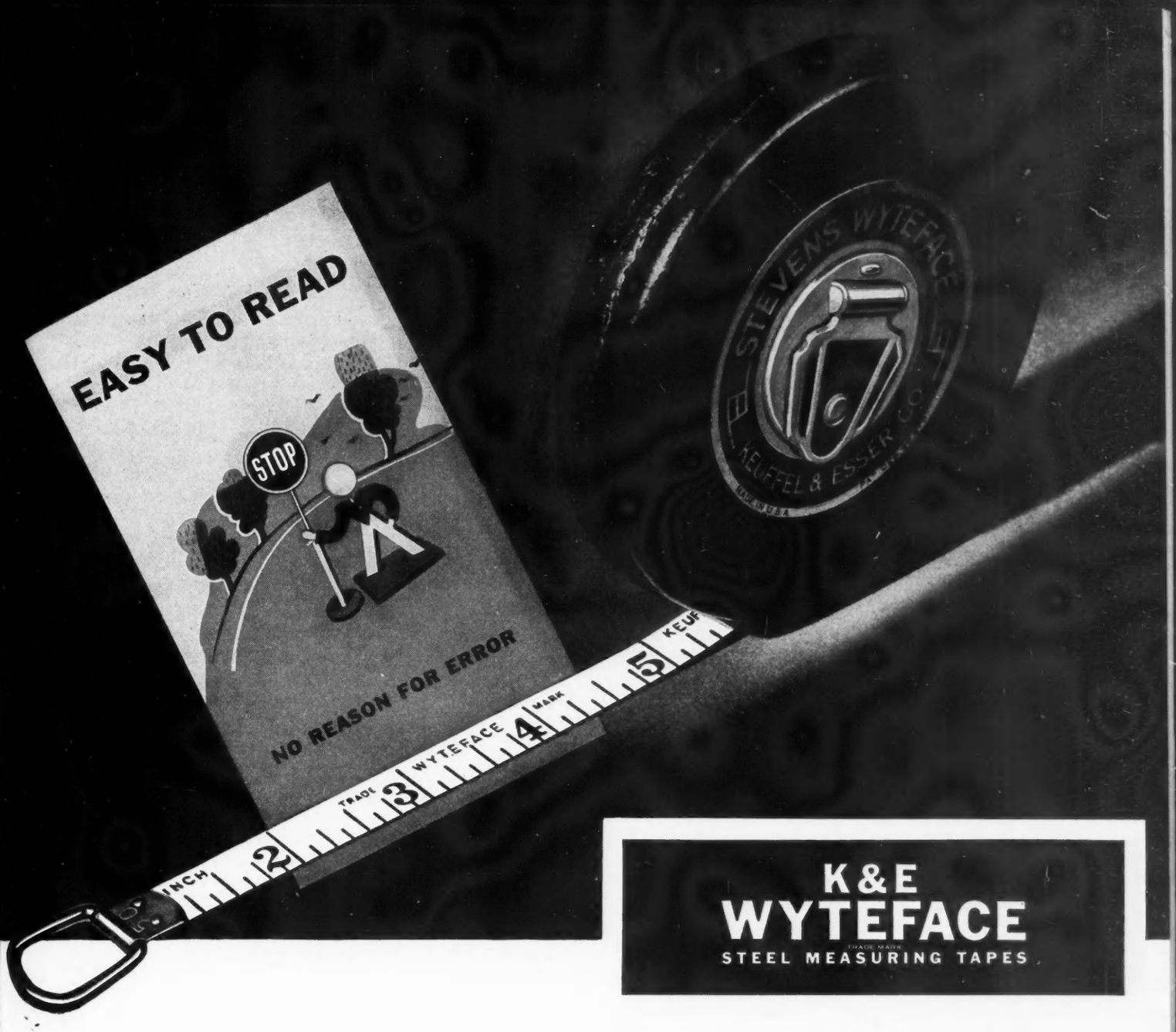
However, there was one point along the contemplated pull where the line had to be passed over a small cliff on its way to the water's edge. To minimize the wear on coating and prevent excessive bend, a special roller was built. It was similar to the one described above except that it employed three tractor rollers instead of one and utilized only two parallel rails instead of the four. This allowed the bend over the cliff to start 100 feet away from it at the point where the last higher single roller was placed.

As welding progressed and the welds cooled sufficiently, the crew applied two coats of coating. (When the actual pulling to sea started men were stationed along the line to touch up spots that had been scraped off when the pipe passed over the rollers.)

In order to pull the line out to sea 3300 feet and do that pulling from shore, a heavy anchor was dropped at the spot decided upon for the line's end. A large snatch block was made fast to the anchor and a seven eighths-inch swabbing cable was made fast ashore to the end of the line, passed on out to sea and through the block, and then brought back ashore, where it was tied to a tractor.

To allow observers to watch the





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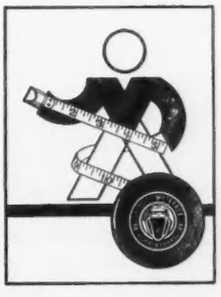

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The pipe pulled was well corroded but it was possible to salvage about 500 feet from the two lines that were pulled and replaced.

progress of the line as it was being pulled out and to enable the men on the derrick barge, stationed above the snatch block, to locate and hoist the end up for connection with the sea hose, two small buoys were attached to the end of the line. They were spaced several feet apart for visual line-up, so that a man ashore could tell what effect, if any, current was having on the straightness of the line.

When the end of the cable was brought ashore, it was passed over a tractor roller. But a straight pull on the line from the shore far enough inland to get the 3300 feet of line out to sea would have thrown the line into the bush at the edge of the clearing. To get around this obstacle, another roller was rigged up on the rear of a Diesel tractor, the weight and pulling power of which were more than sufficient to maintain the necessary angle in the line.

When all the pipe had been welded and strung along on the rollers, a tractor beginning the pull near to the end of the line pointed offshore started casting off in the opposite direction. As the back end of the pipe left each roller it was supported by a side boom tractor to prevent too much bend in the 100-foot unsupported interval between rollers.

Pulling started at 9:20 in the morning and the end of the pipe was successfully landed at 9:45, counting five minutes lost when the pulling tractor reached a soft spot and had to be replaced by the side boom tractor which was at that time on good hard ground and in a good position to substitute for the former. No difficulty was experienced, however, in getting the line started again. When the substitution was indicated, only 600 feet of pipe line remained ashore.

When the offshore end of the line was in place under the derrick barge and above the snatch block, a diver was sent down to remove the 1¼-inch pipe plug screwed into the bull plug and to allow the line to fill with water.

Continual observation of the floating buoys mentioned above revealed that the line went out to the anchorage practically straight, although the tide was running at the time. This satisfactory aspect often does not reveal itself when similar jobs depend for power on tugs or tankers working offshore as their pull is at best somewhat similar in result to that of a poorly matched team of horses, unstable, so to speak, and slipping from side to side.

The new line was sent out because two older lines needed pulling ashore for inspection and replacement of joints. Deep carbon pits occurred in spots in some parts of the pipe, and general pitting occurred along that part of the pipe which rested on the bottom of the Gulf of Paria. However, better than 5000 feet of pipe was salvaged, much of it good enough to go back into sea lines.

It was noticed that excessive corrosion occurred at points along the lines where metal straps were used to anchor the lines with sand bags when the lines were first installed. These straps were made of metal with a different composition, and that difference is supposed to have set up an electrolysis with the help of the salt water of the gulf.

Another view of the line stretched out on the ground ready to be pulled out to the loading anchorage in the Gulf.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

New Mexican petroleum contract approved

President Cardenas of Mexico, December 8, approved a new contract with W. R. Davis, which calls for the purchase of Mexican oil and its distribution in Europe. It is understood the deal calls for 18,000,000 barrels of oil, the price of which is mentioned as $16,000,000 to be paid in commodities. The oil is reported going to some Scandanavian countries.

Mexico willing to pay for expropriated land

At a recent interview with reporters, President Lazaro Cardenas of Mexico expressed the country's willingness to pay for all expropriated lands, but added that it will never return them. Commenting on the general situation in Mexico, he stated that all his efforts for the remaining two years of his term would be spent in rebuilding his nation's credit abroad. He outlined further that during the coming year new schools will be built throughout the republic for the education of the workers, and to establish new industries.

With reference to widespread rumors that Mexico is an enemy of foreign capital, the president stated that foreign organizations abiding by the law will have the full support of the government. On the other side, the country is not willing to tolerate rebellious acts which are detrimental to the prestige of Mexico, he added.

Oil company asks supreme court for injunction

La Norma, an oil company associated with The Texas Company of Mexico, has asked the Federal Supreme Court for an injunction against the embargo the Vera Cruz government has placed on its properties in connection with the state's claim for 1,250,000 pesos as subsoil taxes. The Vera Cruz courts recently denied the company injunctions.

Texas gets new large Colombian concession

Texas Petroleum Company, subsidiary of The Texas Company, has been granted by the Colombian government a 100,000 hectare concession, 60 kilometers east of Bogota in Llanos, a territory expected to get much wildcatting next year.

Shell of Colombia has applied to the government for permission to establish a sea coast terminal for a pipe line when production is developed in Magdalena Valley, Colombia.

Cucuta and Catutumbo oil areas continue isolated by floods. The only communication is by airplane.

Installing pump on Scotland well

Continuing its search for oil in Scotland, Anglo-American Oil Company recently has tested four beds of sands from 2000 feet to 2152 feet near Dalkeith. These have given a combined natural gas production of 5,000,000 cubic feet a day, with a shut-in pressure of 700 pounds per square inch. These sands were temporarily plugged off and a further test was conducted on the oil sands at 1750 feet. Over a five-day period the rate of production averaged from 8 to 10 barrels a day. Operations were then suspended, pending the delivery of special oil-well pumping equipment. Another well is now being sunk some distance away in order to secure additional information regarding the extent of the oil and gas producing area.

The latest development is the sinking of a well in the Fife coalfield by D'Arcy Exploration Company, which is also engaged in drilling for oil near Dalkeith. When oil was found in Midlothian it was thought that the same oil lake could be tapped on the Fife side of the Firth of Forth, and the operations started a few miles inland from the Wenyss coalfield are intended to prove whether that theory is correct.

Canadian Fields

Del Bonita wildcat flows 35 barrels . . . Fibstone structure test cores heavy saturation . . . Turner Valley activity declines to low ebb due to market

With development activity below its seasonal low ebb in Turner Valley, Canada's major oil field, because of unfavorable market conditions, interest has shifted to Alberta wildcat structures where several important developments took place last week.

Terminal Oil Company, Ltd.'s 1, in the Del Bonita field, near the Montana border, successfully shut off water that had been drilled into after passing through two oil sands and one gas zone. A new liner was run and on gunperforating and acidizing of the lower saturation, the well started flowing 35 barrels a day. With rods and tubing run, it is expected to be a 150-barrel well. The oil is of 35 gravity. The test is believed to prove 2000 acres of the 5000-acre block held on the structure by the Terminal company.

Officials are considering bringing in new equipment for a test of the upper oil sand, which was drilled through for 35 feet, before completing. The favorable showing is of particular interest to The California Company, subsidiary of Standard Oil Company of California, which controls 6700 acres on the north Ross Lake extension of the structure, and to Wheatman Oil Company, which holds 720 acres. The latter company will drill a test in the northeast quarter of Section 24, Township 1, Range 21-w4.

On the Ribstone structure, Blackfoot Ribstone Oils, Ltd.'s wildcat on Legal Subdivision 7, Section 28, Township 43, 2-w4, cored a heavy saturation below 2034 feet. Casing is being set to the top of the sand, and the well deepened into the formation. The test had passed through a sand at 1865 feet which was considered good for a 40-barrel well, and between 1975 and 1981 feet, a flow of about 2,000,000 cubic feet of gas was picked up.

On the Steveville structure, Anaconda Oil Company, Ltd.'s wildcat on Legal Subdivision 15, Section 9, Township 22-12-w4, overcame caving difficulties and was drilling below 2300 feet. A. J. Scott, managing director of the company, reports indication of a change of formation. "Two flows of gas have been encountered and there is now practically enough gas to run the boiler," he said. "The structure looks exceedingly promising."

Altoba Oils, Ltd.'s test of the Clear-

water structure, which a week ago recovered a saturated core below 1196 feet, was reaming below 530 feet. The well will be reamed down to 1190 feet, where 3-inch casing will be set. Cavings from upper levels delayed the work last week. The hole is bottomed at 1318 feet.

On the Grease Creek structure, west of Olds, Grease Creek Petroleums, Ltd., and Imperial Oil Company, Ltd., were moving in equipment for a joint test. Drilling will start just above the cardium sandstone and the Madison lime, from which production is obtained in the Turner Valley field, is expected at about 4000 feet. The two companies hold leases on nearly 15,000 acres on the structure. Snyder & Head have been awarded the drilling contract.

Green Valley Petroleums, Ltd.'s Banner 1, wildcat on the Highwood-Sinclair structure southwest of Turner Valley, was drilling below 6440 feet, including 1100 feet of Madison limestone. The test had an encouraging oil show near the top of the lime and until last week had been drilling in a hard formation comparable to the cap of the lower producing horizon found in Turner Valley. A change in structural conditions was experienced last week and the test is now in a softer formation.

Possibility that a test may soon be undertaken on the Blood Indian Reserve was indicated by the report of Heiland Research Corporation, of Denver, which has been surveying the area for West Petroleums, Ltd. Engineers in the field report that there is a greater closure than has previously been detailed in Southern Alberta, and that a structure of magnitude has been defined. A well site has been selected. Working with the party were Russell V. Johnson, R.P.E., of Calgary, and Dr. Hodgson, chief of the Dominion Department of Seismology.

Saskatchewan is beckoning several Alberta operators, largely because of provincial government regulations designed to encourage exploration activity. Acreage on structures undergoing test are granted companies in 5000-acre blocks in proportion to the amount of development work they do, and the structure is not open for public filing while exploratory work is under way. There are no annual rentals, but the government gets a royalty of 10 cents a barrel on oil and 5 cents a thousand cubic feet on gas when production is obtained.

An early test of Oklata Oils, Ltd.'s 6, Legal Subdivision 3, Section 30, Township 18, 2-w5, most interesting test in Turner Valley, was indicated when all the cement from the faulty plug in the 10,200-foot hole had been reamed out. A new cement job will be undertaken this week in an effort to shut off water which has been working against oil in the upper horizon. One and one-half miles west of production, the well is the deepest to be drilled in the British Empire and, if successfully completed, will triple the present proven area.

New company in Cuba purchases leases

A new concern, Compania Petrolera La Estrella de Cuba, apparently affiliated with the Royal Dutch-Shell group, has been organized at Havana, Cuba, with capital stock of 1,200,000 consisting of shares of $10,000 each, all of which has been subscribed.

Officers of the company are J. E. F. de Kok, president; James Marnix de Booy and Andre Poliakoff, vice presidents, and W. G. Wieringa, secretary.

The company is understood to have paid $620,000 for leases that were purchased in the provinces of Havana and Matanzas.

Canadian imports from U. S. show large gain

Canada's imports of crude petroleum showed a large increase during the 12-month period ending March 31, 1938, over the preceding year, according to a report from the American Consulate General, at Toronto, made public by the Department of Commerce.

During the 12-month period ending March, 1938, imports amounted to 1,345,170,955 Imperial gallons valued at $46,236,193, a substantial increase over the 1,179,382,322 Imperial gallons, valued at $37,123,032, imported in the 12 months ending March, 1937, the report stated.

Of this total the United States supplied 991,235,123 gallons of crude petroleum, valued at $36,288,510 during the 1938 period, compared with 872,393,596 gallons, valued at $28,788,636, during the corresponding period of 1937, it was stated.

Imports of crude petroleum "not subjected to any other process than natural weathering and removal of foreign matter and water, when imported by oil refiners to be refined in their own factories" during the 1938 period under review amounted to 6,915,388 Imperial gallons, valued at $346,044, compared with imports of 9,777,409 Imperial gallons, valued at $438,827, in the preceding 12 months. All of these imports in both years came from the United States, according to the report.

Canadian output is at another new peak

The Dominion Bureau of Statistics at Ottawa reports that the Cenadian output of crude petroleum and natural gasoline advanced to 817,706 barrels from the preceding month's high record of 693,332 barrels and the August, 1937, total of 291,641 barrels. During the first eight months of the current year, 4,430,463 barrels were produced compared with 1,599,185 barrels in the corresponding period of 1937.

Canada imported petroleum, asphalt and their products to a value of $6,019,211 in August; the July imports were worth $6,955,014. Crude petroleum importations in August amounted to 132,531,778 imperial gallons of which the United States supplied 96,894,778 imperial gallons, Colombia 19,006,000 imperial gallons, Venezuela 9,076,000 imperial gallons and Peru 7,555,000 imperial gallons.

Natural gas production in Canada during August totaled 1,758,586 thousand cubic feet compared with 1,583,803 thousand cubic feet in the previous month and 1,428,900 thousand cubic feet in August, 1937. During the first eight months of this year, 21,327,921 thousand cubic feet were produced; a year ago, the production totaled 20,338,110 thousand cubic feet.

The Canadian imports of mixed gas (natural and artificial) in August amounted to 11,855 thousand cubic feet valued at $7,593; in the preceding month, 10,475 thousand cubic feet worth $6,842 were imported.

Germany oil output up 27 percent

Total production of mineral oil in Germany during the first nine months of the current year amounted to 2,954,966 barrels as compared with 2,328,157 barrels during the same period of 1937, an increase of 27 percent, according to a report from the American Consulate at Bremen, made public by the Department of Commerce.

The Hanover fields accounted for about 80 percent of the total production, as compared with 91 percent during the first nine months of 1937. The figures show that production during 1938 averaged 328,329 barrels monthly, as against 264,446 barrels during the preceding year, the report stated.

However, the increase production in mineral oil and synthetic gasoline in Germany has not been effective in reducing imports, or even to keep pace with the increase in the consumption of such products. During the first seven months of 1938, Germany imported 2,596,900 metric tons of mineral oils and gasoline as compared with 2,365,000 tons during the same period in 1937.

On the other hand, total exports of mineral oil products (chiefly lubricants) during the first seven months of 1938 amounted to 104,900 metric tons, which compared with 133,100 metric tons during the corresponding period last year, a drop of 21 percent, according to the report.

France making more of its oil products

The rather rapid development of the French petroleum refining industry during the past few years has resulted in a steady contraction of the market for imported petroleum products, according to a report to the Department of Commerce from the office of the American Commercial Attache at Paris.

This applies more particularly to such commodities as gasoline, kerosene, lubricating oils, and comparable materials which are the more important derivatives of the domestic industry. On the other hand, certain other items, such as fuel oils, road oils, and petroleum cokes are permitted entry into the country without limitation provided the importer holds the necessary license from the government, the report stated.

Both paraffin wax and petroleum are included among the commodities which may be imported without restriction due to the fact that the whole French refining industry has not found the market for these materials sufficiently attractive to encourage the processing of all potential residues. Some production does exist, especially of wax, but it has been found that the major portion of French requirements of petroleum can be more advantageously imported from overseas because of economic reasons, according to the report.

Japan again taking California crude

Japan is again taking California crude. Last week tankers were enroute to Japan with the first part of what was expected to be a 10,000,000-barrel take during the next six months from the Pacific Coast.

Four Japanese tankers loading 285,000 barrels for naval and commercial account left within four days last week. The movement got under way two weeks ago when the little Yamashita carrier Mitu Maru took 50,470 barrels of fuel at Union docks for Yokohama. She was followed by the Mitsui express motorship Otowasan Maru, loading 70,000 barrels at the General Petroleum terminals and stopping off at Port San Luis Obispo. Asana Bussan Kaisya's motorship Kiyo Maru sailed for Kudamatsu with a 67,000-barrel cargo from the Richfield docks. The Lino Shoji Kaisya express tanker Toa Maru was due from Kobe for bunkers, thence to go to Port San Luis to load 90,000 barrels of Kettleman crude.

Oil imports in Argentina increase in first six months

Although Argentina has been aiming in recent years toward self-sufficiency in oil products, the country continues to be dependent on imports for a large proportion of its requirements. According to reliable reports, imports for the first six months of this year amounted to approximately 342,000 metric tons, against 219,000 in the similar period of 1937, while gas and fuel oil shipments totaled about 688,000 against 560,000 metric tons. However, gasoline imports declined substantially to 1020 metric tons in the first half of this year, as compared with 19,900 in the similar half of 1937.

Due to the opening of a number of motor roads and the growth of the number of motor vehicles, last year witnessed a substantial advance in consumption of gasoline to a new record level.

Personal Glimpses and Notes From Here and There in South America

By WM. V. GROSS, Foreign Editor The Oil Weekly

CHESTER CREBBS, salty seagoing president of Mene Grande Oil Company at Maracaibo, recently stopped over in Barranquilla, Colombia, on his way back to Venezuela after a trip to the states. At dinner in the Del Prado he told of his first experience with the "Frost-biters," a small boat sailing organization in New York. It's safe to bet he still prefers sailing the somewhat longer Star.

Crebbs has long been sailing Star boats in tropical waters and has been good enough to participate in the international regatta for that type of boat. He knows how to handle the small things when the trade wind zooms across Lake Maracaibo. But he found out that sailing a Frost biter's dinghy, a much smaller proposition and one minus a keel also, on Long Island Sound on a blustery November day is a thing requiring considerable more acrobatic dexterity.

Talked into tending jib for a friend when he had on nothing but his business clothes, Crebbs entered the race—and got as far as the first buoy, or marker. When rounding the marker in a brisk breeze, the dink turned over, depositing skipper, crew and all in the invigorating lap of Mother Sound. A speed boat eventually picked them up, and as soon as they got back to the club, Crebbs thawed out, after a few hours.

One party at the table opined, "I'll bet you looked like the devil. You ain't pretty just under normal conditions."

N. O. WATSON, head of Venezuelan Oil Concessions in Venezuela, ought to be at The Hague by now the boys in Maracaibo are saying. He left for there about mid-November, intending to visit the United States enroute.

OSCAR WOLF, second in command in Colombia for South American Gulf Oil Company, told this wandering staff man of The Oil Weekly in Barranquilla he'd bounce a papaya, or something harder, off his bean if he got back to Houston and didn't tell Bert Hull hello for him the first thing. Will some of you Texaco men who can read walk down the hall to the pipe line jefe's office and deliver the message to Bert, please?

J. BRIGHT THOMPSON, lately with The Texas Company in Houston and now with South American Gulf Oil Company in Barranquilla, Colombia, pulled a good one recently. Expecting Mrs. Thompson's arrival from home any day, Bright was running around like a chicken with its head off looking for a house in that underhoused city. He found one at night, and when he described it to the less fortunate homeseekers, congratulations were general.

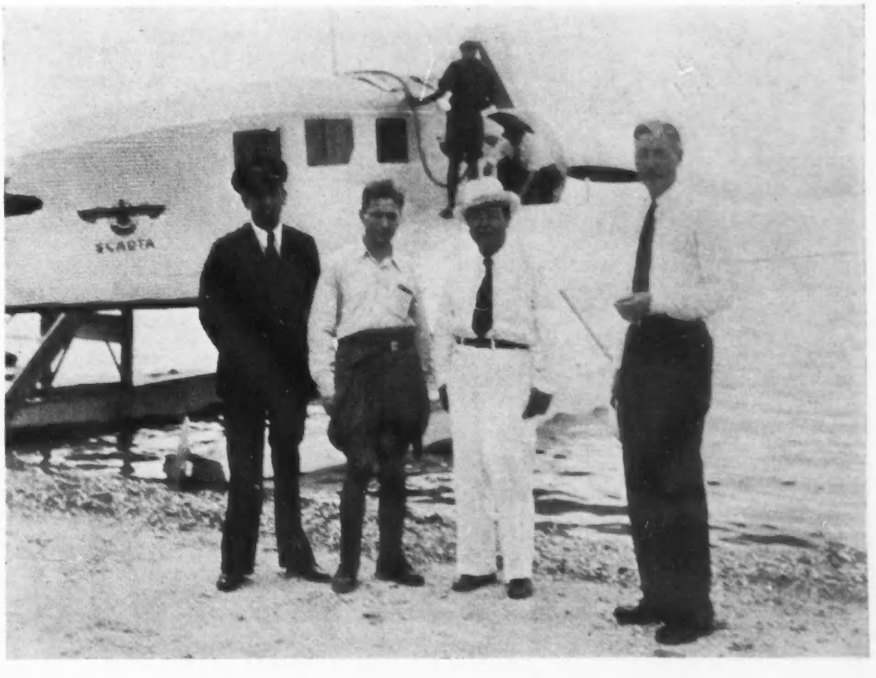
The bride arrived last week and the Thompsons loaded up with belongings from Bright's temporary residence. Just before sundown they arrived at the new home, and the Mrs. saw what Bright had overlooked in the darkness. The home was perfect except for one thing. It had no screens. And the landlord refused to install any on the grounds that they would keep out the light.

JOHN J. DEMPSEY, New York, executive of Phillip Carey Company, who is doing the northern part of South America for that firm and his own, Armor Products Company, tells the following story:

A salesman was attempting to sell window screen in the tropics. A dealer refused to buy, saying people in the tropics didn't like screens and that he didn't personally like them. Whereupon the salesman came back at him with, "Yeah, but they keep the flies out!"

"That's just the trouble," said the dealer. "When flies get in the house, if you've got screens you can't get them out."

Dempsey was in Bogota, Colombia, November 27.



Oscar Wolf, assistant general manager of South American Gulf Oil and formerly with The Texas Company in Houston, believes in seeing to it that government representatives are intimately acquainted with what is going on. This picture was taken on the shore of Cartagena, Colombia, while he was en route Covenas, Barco pipe line terminal on the Atlantic, with two of them. Left to right: Pilot Fernandez, Dr. Perez, personal representative of President Santos of Colombia, Francisco Guerrero, and Wolf.

MEN IN THE INDUSTRY'S NEWS

RALPH D. RISSER OF SHELL PETROLEUM CORPORATION ELECTED CHAIRMAN OF A. P. I. EAST TEXAS CHAPTER

J. P. STRAIGHT, R. M. BASS AND J. J. JENKINS VICE CHAIRMEN AND W. S. MORRIS SECRETARY

THE East Texas Chapter of the American Petroleum Institute's Division of Production elected Ralph D. Risser, of Shell Petroleum Corporation, chairman for the ensuing year at a meeting in Kilgore on December 6. He succeeds Byron Meredith of Sinclair Prairie Oil Company.

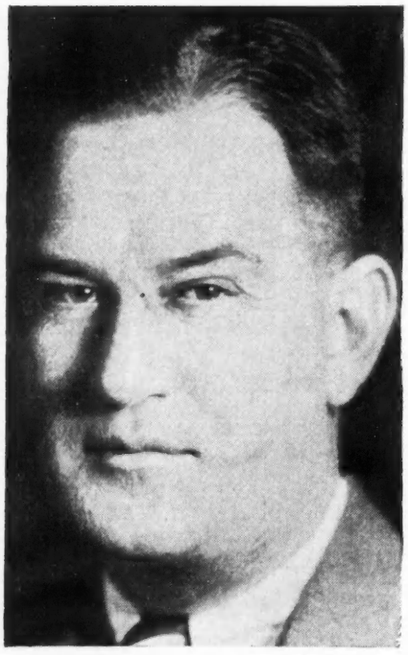
Three vice chairmen were elected as follows: R. M. Bass, Sinclair Prairie Oil Company; J. J. Jenkins, independent operator; and J. P. Straight, Cities Service Oil Company. They succeed R. B. Bradbury, Houston Oil Company of Texas; M. W. McVey, independent operator; and L. H. Moore, Gulf Oil Corporation.

W. S. "Buck" Morris, field chairman for the East Texas Engineering Association, was reelected secretary-treasurer. D. M. Kerr, Lufkin Foundry and Machine Company, succeeded G. P. Brainard, Jr., of Shell Petroleum Corporation, as assistant secretary-treasurer.

An advisory committee, with Byron Meredith as chairman, was elected as follows: E. G. Bateman, drilling contractor; R. M. Bradbury, Houston Oil Company of Texas; E. W. Chatterton, Federal Tender Board; W. J. Christian, Railroad Commission of Texas; B. M. Givens, Sun Oil Company; C. D. Hubbard, Weaver-Crim Corporation; F. A. Lawrence, Cities Service Oil Company; Harvey Lee, Magnolia Petroleum Company; B. E. Moir, Atlantic Refining Company; M. W. McVey, independent operator; L. C. Peters, Humble Oil and Refining Company; D. T. Ross, construction contractor; M. C. Sells, Sells Petroleum, Inc.; R. W. Sole, Arkansas Fuel Oil Company; J. E. Springer, Tide Water Associated Oil Company; C. E. Taber, C. L. McMahon; and W. W. Wise, Wise-Jackson-Markham-Snedden.

The following program committee was elected: E. B. Miller, Jr., Tide Water Associated Oil Company; Phil Montgomery, Halliburton Oil Well Cementing Company; C. C. Sloan, Ohio Oil Company; and Frank Thyng, Oil Well Supply Company.

The chapter's membership committee will be as follows: R. O. Busby, Gulf Oil Corporation; W. H. Bowden, construction contractor; John E. Murrell, Shell Petroleum Corporation; J. C. Randolph, National Supply Company; and F. A. Schell, Jr., Stanolind Oil and Gas Company.



RALPH D. RISSER

ROBERT M. BASS

J. P. STRAIGHT

J. J. JENKINS

DAN O. HOWARD, Oklahoma Corporation Commission, was elected president of the Oklahoma Geological Society at the fifth annual meeting in Oklahoma City December 5. R. G. Hamilton, Schlumberger Well Surveying Corporation, Oklahoma City, is vice president, and R. Hancock, Magnolia Petroleum Company, was elected secretary-treasurer.

T. N. ROBERTS has been transferred from Midland, Texas, to Wichita, Kansas, as district geologist for Mid-Continent Petroleum Corporation in Kansas.

R. S. SCOTT, geologist for Sun Oil Company, has been transferred from the Dallas general office to McAllen, Texas, for duty in the Sun-Kelsey field.

CHAS. W. ALCORN, vice president of Falcon Seaboard Drilling Company, Tulsa, has moved to Houston in connection with the company's increased operations in the Gulf Coast sector. An office has been established in the Esperson building.

JNO. R. DAUGHERTY, vice president and superintendent of production for Arcadia Refining Company, with headquarters at Tyler, Texas, and Mrs. Daugherty are vacationing at St. Marys,

W. Va. The company's East Texas employes and their respective families were entertained December 2 at Tyler with a luncheon, celebrating a safety record of no lost time accidents or injuries in a 15-months period. The party attended a high school football game in the afternoon.

M. C. KELSEY, Dallas, and his Geophysical Survey Society crew left Medicine Hat, Alberta, last week for Texas after more than six months of work in the West Canadian province.

H. R. MILNER, K. C., of Edmonton, officer of several Alberta operating companies, while in Montreal last week, declared the oil industry has complete confidence in the board delegated to administer the new Alberta Oil & Gas Conservation Act. He said the "main purpose of the act is to conserve the natural gas which constitutes the propulsive force necessary for lifting crude oil to the surface. It will also regulate production, having in mind the productive capacity and market available. It is felt that whatever the board does will be in the best interests of the Turner Valley producers."

J. S. SLEGEL, independent operator of Ohio and Pennsylvania, was looking over the tri-state area about Evansville, Indiana, last week.

R. A. BROWN, SR., and R. A. Brown, Jr., of Brown Oil Corporation, Ltd., and active in the management of several other Alberta producing companies, left Calgary last week for England. Officers of the Brown company said one result of their trip may be the making of additional capital available for Turner Valley development.

H. E. SLOAN, oil operator making his headquarters at Fairfield, Illinois, and Miss Theo Sheppard, were married last week in Neosho, Missouri. Miss Sheppard was Sloan's secretary.

MORRIE KIRSCHNER, oil and gas attorney formerly of Tulsa, has established offices in the Furniture Building, Evansville, Indiana.

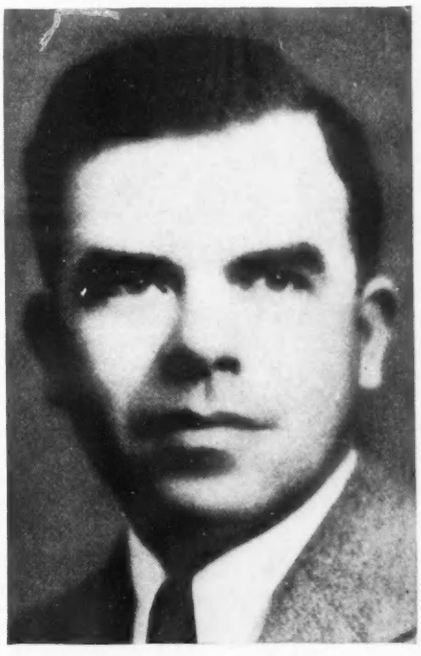
PAUL A. "DIGGER" DIGGS, independent operator, plans moving his headquarters from Vandalia, Illinois, to the Old National Bank Building in Evansville, Indiana. He is interested in Posey County, Indiana.

JOHN P. HOGAN, independent operator of Ohio and Texas, was in Morganfield, Kentucky, last week.

RAY WHORTAN and Boris V. Lerke, Wichita geologists who recently purchased a 40-acre farm in Cowley County, Kansas, to complete a block of acreage, reported a good yield on their row crops, now cut and stacked. Their present interest is directed toward a test on the acreage, south of Udall.

ERNEST K. PARKS LEAVES STANDARD OIL OF CALIFORNIA

ERNEST K. PARKS, petroleum engineer, and recently head of production engineering in the Southern District for Standard Oil Company of California resigned on November 30, 1938. Parks served 14 years with that company following his graduation from Stanford University in 1924. During this time he occupied positions in the central engineering department in San Francisco, in the department of economics, and in various field stations in the San Joaquin Valley fields, finally coming to Los Angeles in 1934 to initiate the work he has just relinquished.



ERNEST K. PARKS

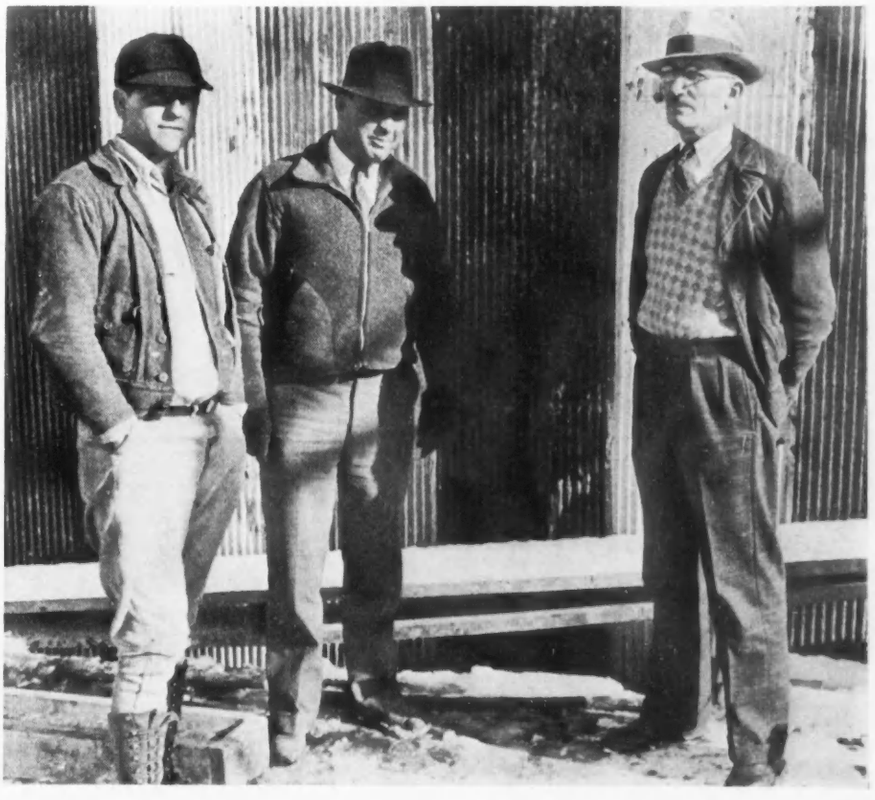
Parks is an active member of the American Petroleum Institute, having served as chairman of the California Committee on Production Practice, and more recently as sponsor for the API Pump Performance Experiment, reported upon by Messrs. Arthur and Parks in a paper presented at the Chicago meeting. Parks is presently chairman of the Southern California Section of the American Institute of Mining & Metallurgical Engineers, and has been active in program work of the Petroleum Division. He plans to continue work in petroleum development and production in Los Angeles in the near future.

BOB ADAMS, of Carterville, Texas, was looking over the southern Illinois coal basin area last week.

FRED CHILDERS, independent operator of Lubbock, Texas, was in Evansville last week while on a tour of new Indiana, Kentucky and Illinois producing areas.

BURDETTE BLUE, president of the Indian Territory Illuminating Oil Company, Bartlesville, Oklahoma, and Rolla Clymer, El Dorado, will address the annual meeting of the Kansas Independent Oil & Gas Association December 16 in Wichita.

C. D. TAYLOR, Barnsdall Oil Company, has been nominated for president of the Purchasing Agents Association of Tulsa. The election will be held December 13. Other nominees are: H. E. Kaiser, Phillips Petroleum Company, for first vice president; J. S. Hawley, Stanolind Oil & Gas Company, for second vice president; W. F. Taylor, Bethlehem Supply Corporation, for secretary-treasurer; M. F. Bridges, Tide Water Associated Oil Com-



These Gulf Refining Company officials took time off to face the camera as they watched their completion of Michigan's first deep rotary test. Left to right—Jed Mabeius, resident geologist; Lester Lafever, production superintendent; and Harold Wright, engineer.

J. W. "Red" Selby, (sitting) chief scout and Thomas S. Edrington, geophysical department, Shell Petroleum Corporation, Houston, are happy over their recent deer hunt at Petty's camp on the Schreiner ranch in Edward and Kerr counties, South Texas. Each got a buck, Selby a ten pointer and Edrington a nine pointer.

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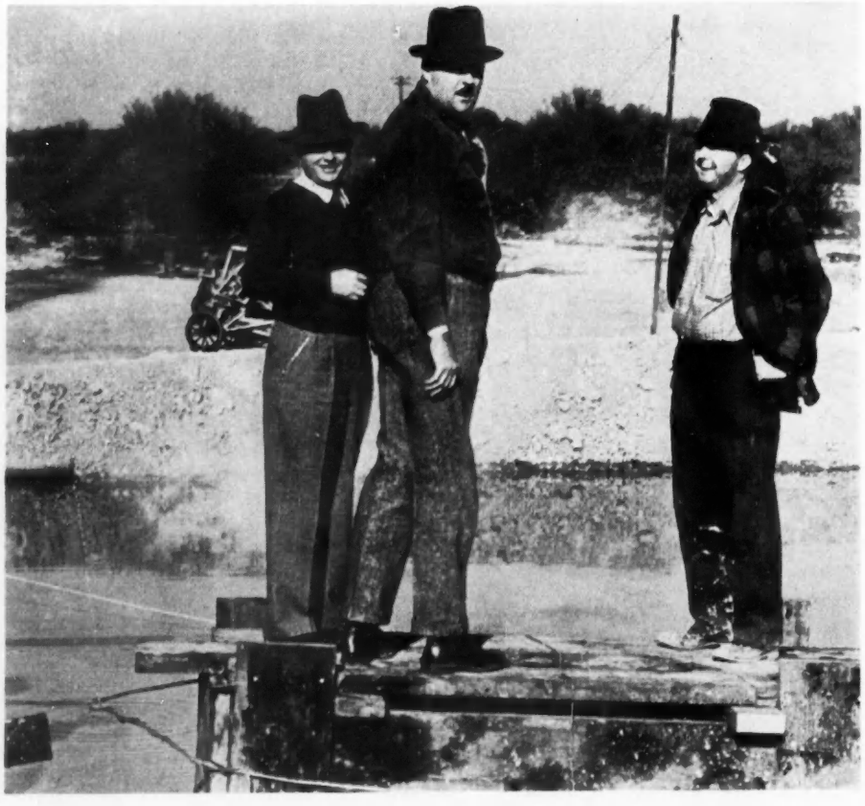
PETE WIGGINS, of Dallas, independent operator, was in Houston last week.

REGINALD G. RYAN, geologist, who has been working in the Forest City Basin of northwest Missouri and northeast Kansas, will return to Baton Rouge, La., about December 15.

pany, for national director; H. M. Cosgrove, for executive secretary, and E. R. Welch, for assistant secretary.

J. M. BALL, scout for The Texas Company, Houston, has been transferred to Illinois.

Charles S. Jones, president of Richfield Oil Corporation, in center, has reason to look around at the photographer as he is inspecting the results obtained by the Tupman-Western 1 wildcat, which his company brought in last week for 3752 barrels. His joy in this new success for Richfield Oil is shared by A. M. Kelley, vice president, at left, and Al Donneley, field superintendent at extreme right. The well is on a 6000-acre block, east of Elk Hills, Kern County, California.



ROBERT WILKINSON and F. P. Byrne, Alberta operators, left Calgary for New York City by plane last week.

CHARLES A. DORE, vice president of Superior Oil Company, was in Evansville last week while looking over activity in Indiana, Kentucky and Southern Illinois.

DIED:

E. F. SIMMS, 68, died at Baltimore, December 6. Funeral services were held last Thursday in Paris, Kentucky.

Simms was active in various enterprises until a month ago, when he was forced to take treatments for a breakdown which he suffered as a result of a serious automobile accident last year.

He was born in Paris, Kentucky, and after graduating at Yale and the University of Virginia, he tried his luck in the oil business at the time when the Spindletop field was discovered. He laid the foundation there, and later in the Sour Lake oil boom, and moved to Houston about 1910. Together with several associates, he discovered the Freeport sulphur dome which was sold to the Freeport Sulphur Company after the development had become a success. Shortly afterward he accumulated extensive holdings of rich Mexican oil lands and organized Freeport Mexican Fuel Oil Company and the Freeport and Tampico Oil Company. After development of these properties he sold them to Sinclair Oil & Gas Company.

Simms organized Simms Petroleum Company, Simms Oil Company, and Louisiana Land and Exploration Company.

OTIS CHALK, 65, died of a heart attack at Big Spring, Texas, December 6. The Howard-Glasscock oil field was drilled in on his land in 1936 and subsequently began drilling his own wells.

FRANK J. HUFFMAN, 60, first vice president and comptroller of the South Penn Oil Company, died December 2 in a Pittsburgh hospital. He had suffered a stroke a day earlier while driving his car accompanied by Mrs. Huffman, Louis H. Johnson, president of the Pennzoil Company of California, and Mrs. Johnson.

Associated with the South Penn company for 40 years, Huffman was particularly well known as an authority on taxation. He was also vice president of the Penn Mex Fuel Company and a director of the Pennzoil and Clayco Gas Companies, South Penn subsidiaries. Besides his wife, he is survived by one son and two daughters.

CARL R. TILLMAN, 42, superintendent of the Glenrock-Parkerton refinery of the Continental Oil Company, was instantly killed November 30 when his car overturned six miles east of Casper. He had been superintendent of the company's refinery at Florence, Colorado, before going to Parkerton in 1933. Surviving are his wife and one son.

ALEX FELTON, 23, oil field worker of Wheeler, Michigan, was fatally injured when a Sun Oil Company truck on which he had been riding in the Edenville oil field of Midland County made an unexpected turn on a winding road and hurled him against a stump. He is survived by his wife and his parents.

THE WEEK'S NEWS SUMMARIZED

Courts

Is a distillate producing well a gas or oil producer? That is the important question now before a South Texas court. The owner of gas rights on property in the Saxet field has brought action against the oil owners on the ground that the distillate well is gas and not oil. If decided in favor of the plaintiff the present ownership of leases in several distillate producing fields might be changed. A decision is not expected for at least 10 days.

The important case attacking Saturday and Sunday production shutdowns in Texas has been postponed until January 16, so that a test of the plaintiff's wells may be made by the Railroad Commission to determine if they are marginal wells. While the Saturday and Sunday shutdowns are under direct attack in this instance, the most serious question to be decided is the validity of the state's four-year old marginal well law. It is alleged the commission exceeded its authority when it reduced, through production holidays weekly, the allowable of marginal wells below the minimum of 20 barrels daily fixed by the statute. A decision for the plaintiff would wreck the basis for much of Texas proration regulations.

The U. S. Supreme Court is expected to uphold Oklahoma's spacing law. The court interrupted the case after hearing only the plaintiff's side, indicating it had sufficient evidence upon which to base a decision, and that the defendant, the state, did not need to present its side.

Curtailment

The question of finding relief for unconnected wells and wells subjected to pipe line proration is a foremost topic. It is likely to be the most important question at the Texas statewide hearing today (Monday), although the problem of refinery operations is to be considered also. Last week Commission Chairman Thompson complained because a few of the big purchasing firms were not cooperating in an effort to lift pipe line proration or relieve the unconnected well situation.

Meanwhile, reduced allowables of some of the important Illinois areas was made effective by Sohio Corporation, which commenced limiting its purchases in 12 fields to top quotas that ranged from 20 to 40 barrels per well.

California operators are to meet December 13 in an endeavor to bring the state's output down to 600,000 barrels, a reduction of 60,000 barrels. Fear has been expressed that markets will collapse unless this is done by January 1.

A meeting of independent operators of Illinois opposed enactment of proration measures by the state, which they claimed would be for the benefit of other states but not an advantage for Illinois.

Prices

Some changes in prices occurred last week, affecting both crude and refined products. Changes in the crude market were all downward, and affected fields in Oklahoma and Texas. Meanwhile, Oklahoma territory showed improvement in natural gasoline, regular gasoline and kerosene prices.

Two major purchasing companies in Texas abandoned gravity scale postings on oils higher than 40 gravity, whereas their previous schedules listed prices for all grades up to and including 45 degrees. This brought Humble Oil & Refining Company and Magnolia Petroleum Company into line with other purchasing firms.

The price of Healdton crude in Oklahoma was lowered 8 to 16 cents a barrel.

Compact

When the Interstate Compact Commission meets this week weight problems are to be considered. It probably will be the most significant meeting of the body in several years.

Increasing market troubles must be faced. It must be determined whether the compact is to be extended or just what changes should be favored. Production control has been fairly successful except in Illinois, Louisiana and Arkansas, which has caused considerable dissatisfaction and some demand for federal control. Oklahoma and Texas have opposed any idea of obtaining federal power.

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Oil in the Courts

Holder of gas lease contests oil rights owner for operation of distillate well . . . Texas shutdown suit to test validity of state's marginal well law

Seek rule whether distillate is gas or oil well

Verdict in an injunction hearing in Federal District Court at Corpus Christi, in which a decision will be necessary as to whether a well contains oil or gas in its reservoir, will not be forthcoming for at least 10 days.

The Southern Minerals Corporation is seeking an order restraining Jay Simmons and J. E. Webb from producing a well in the Saxet field of Nueces County.

The plaintiff owns the gas rights under the tract on which the well was drilled. The well, Harrell 1, is producing a fluid, commonly known as distillate, which Southern Minerals maintains is a condensate and was originally a gas in the sand from which it was produced and that therefore the defendants have no right to it.

The case has attracted widespread attention because it is the first case of its type and because of the manifold effect a decision in favor of the plaintiff would have. There are numerous distillate wells, especially in South Texas and the Gulf Coast, and likewise there are numerous instances in which the gas rights under a tract are held by one party and the oil rights by another.

At the present time distillate wells are produced as oil wells in that they are conceded to contain fluid in the sands from which they produce. In view of the fact that under Texas statutes, mineral rights are owned or bought in place rather than at the surface, a decision for the plaintiff would set a precedent for much future litigation.

Experts Testify

The trial consisted mainly of testimony by experts for both sides. Dr. George Brown, professor of chemical engineering at the University of Michigan; Dr. Eugene Stephenson, professor of petroleum engineering of the University of Kansas; and E. V. Foran, consulting petroleum and natural gas engineer, all testified they believe the product of the well to have been a gas in the sand. Their conclusions were based on a number of experiments which were described fully to the court. One of their strongest points was that when a true sample of the liquid from the well was subjected to bottom hole pressures and temperatures it passed into a gas state and that when the pressures and temperatures were reduced to compare with well head conditions, the gas condensed and again became a fluid. The fact that the fluid contained a light color had no effect on the performance of the test.

Defense testimony by Dr. E. P. Schoch, professor of chemistry at the University of Texas and by E. O. Buck, consulting engineer from Houston appeared to be shaken in the face of cross examination by attorneys coached by the plaintiff's experts, who found fault with their methods of sampling the well and the equipment with which they conducted tests designed to prove the product of the well to be a liquid in its reservoir.

Texas shutdown attack postponed to January 16

The suit to test the validity of the Saturday and Sunday shutdown order issued by the Texas Railroad Commission has been delayed until January 16. This delay was ordered by District Judge Ralph Yarborough last week in compliance with an agreement reached by Attorney General McCraw and C. R. Starnes of United East and West Oil Company.

To Test Wells

The purpose of the delay was to give the Railroad Commission time to test the company's wells to determine whether they were marginal as alleged in the plaintiff's petition. It was estimated that approximately 100 wells will be affected by the test.

The court order provided that the wells shall be pumped or produced 30 consecutive days to determine whether they can produce 20 barrels per day average during this period. If they produce more than 20 barrels they are not marginal wells. If they produce 20 barrels or less, then those which are pumping would fall within the specifications provided in the marginal well law.

Involves Marginal Law

A study of the case developed the fact that while the Saturday and Sunday shutdown order is under direct attack, the most serious question to be decided is the validity of the marginal well law, the statute which has been on the books for about four years but which has never been subjected to a court test.

In his petition, Starnes alleged specifically that the Railroad Commission had exceeded its authority when it reduced the allowable of his "marginal" wells below 20 barrels daily, the minimum fixed for wells which produce from depths ranging from 2000 to 4000 feet. It is expected, however, that the Railroad Commission will contend that the remainder of the law is of equal importance, and it is this section which says the allowable may not be so reduced if it injures the well.

Probably no more satisfactory field for making such a test could be found so far as the Railroad Commission is concerned. The Saturday and Sunday shutdown order, or variations of it, has been in effect there for more than a year, and meanwhile pressures have continued to rise and conditions generally have grown no worse, if they have not improved. Most engineers are of the opinion that the reduction in oil allowables from the field (which has been offset to a large extent by an increase of salt water withdrawals) has been highly beneficial in that it reduced the total displacement from the reservoir and thus prevented accelerated pressure declines.

Regardless of the outcome of the hearing, the United East and West will have gained. The order was entered while six days of shutdown remained for December, and the 100 wells will gain approximately 12,000 barrels during December as a result of the court agreement which provided that all oil produced during the tests was legal oil and could be moved in commerce.

Should the shutdown orders be extended into January, which is generally expected, the Starnes wells will, of course, benefit for an additional Saturday and Sunday, at least, since these would fall within the 30-day testing period. The rate of flow at which the commission will make its test will of course determine the amount of oil that is produced over and above commission allowables.

Oklahoma spacing law expected to be upheld

Validity of the Oklahoma oil-well spacing law will be affirmed by the U. S. Supreme Court, it was indicated December 7 during hearing of the appeal of Russell B. Patterson, Tulsa, from an Oklahoma Supreme Court decision upholding the act.

The court's attitude was indicated by its refusal to hear attorney's for the state, defending the law, after Patterson's attorneys had argued their reasons for contesting the measure's validity.

The halting of a case in the middle of argument invariably indicates that the court has heard sufficient to draw its own conclusions and results in dismissal of the appeal involved.

Validity of the spacing law was challenged by Patterson in a suit against Stanolind Oil and Gas Company and Amerada Petroleum Corporation, brought as the owner of royalty rights on a six and one-fourth acre tract in Lincoln County on which the companies drilled and operated an oil well. The area was spaced out under the spacing and drilling regulations of the Oklahoma Corporation Commission.

Appoint conservator in Polk lease litigation

Clay Cotton, state senator from Palestine has been named conservator for 3000 acres of land involved in litigation in Polk County, Texas. The property is now operated by the Gulf Oil and Humble Oil & Refining and the State has filed suit alleging the land is part of a vacancy.

The oil companies are to operate the properties and impound the proceeds pending final adjudication of the case.

Compact Meeting

Commission meeting this week significant . . . Must decide if compact should be extended, what changes in act needed, as well as increasing market troubles

The next meeting of the Interstate Oil Compact Commission, to be held in Fort Worth December 14 and 15, may prove to be one of the most significant the organization has held within the past two years.

Not only must the Commission face the problem of increasing market troubles, but it must determine whether the Compact is to be extended for another two years and just what changes should be made in the Federal statute authorizing the organization.

This may be the last meeting at which Ernest O. Thompson will appear as chairman or representative of the State of Texas, although he has already been elected chairman for another year. Appointments to the Compact are the right of the governor, and Lee O'Daniel, Governor-Elect of Texas, has not yet indicated whether Thompson will be named to succeed himself. Most observers, however, believe that O'Daniel will follow this procedure since he was present in Tulsa when Thompson was highly praised and nominated for the chairmanship by Governor James V. Allred. By that time, Allred and O'Daniel had reached an understanding which would almost certainly have prevented this move unless it had their mutual approval.

While production control has been relatively successful during the last few months and the three principal producing states have stayed in line fairly well, conditions have not improved enough in Louisiana, Arkansas and Illinois to remove them as a threat to the Mid-Continent crude market. Kansas and Oklahoma especially are affected by these operations and at recent meetings Kansas has demanded that the Compact be expanded to include Federal authority to allocate production between the various states in an effort to retain the markets she is losing to Illinois.

Federal Control

Texas and Oklahoma, however, have opposed this program as they have opposed all other efforts to obtain Federal control. Within the past three weeks, Governor Huxman of Kansas has denied that he favors withdrawal from the Compact, but it is well known that his group still seeks some method that will in a measure freeze markets as they were in 1934.

The attitude of Texas on the problem of Federal control is well known, and it is unlikely that such a clause will be included in the bill to be presented to Congress for reenactment in the spring. There is, however, some reason to believe that an agreement was reached at a meeting held by the Compact's Advisory Committee in Dallas last week, details of which were not revealed to the public.

Meanwhile, should the breakdown of proration become serious and Federal control result, or the allocation of production between states to be provided for through the Compact, Texas has gained that position which she sought at the time N. R. A. was enacted, that is, the allowable for Texas has been raised to a point that makes it proportionate to the reserves which she holds.

This is the secret of the Saturday and Sunday shutdown, and is probably the principal reason why this method of reducing production has been followed instead of simply cutting 2/7ths from the allowable of each field.

By January 1, the basic allowable upon which Texas proration orders are fixed will approximate 1,800,000 barrels daily. By the use of shutdown orders through January, this figure can be reduced some 400,000 barrels to 1,400,000 but the basic figure, in the eyes of the Texas Railroad Commission, is that which counts. This 1,800,000 barrels represents about 52 or 53 percent of the total United States consumer demand for domestic crude as calculated by the U. S. Bureau of Mines. Railroad Commision engineers estimate that the Texas reserves of some seven billion barrels are approximately 52 or 53 percent of the national reserve, which has been estimated at 13,000,000,000 or more barrels.

Certainly if the other states wish to open up or should Federal control occur, Texas will be in position to prove that she is capable of producing this amount of oil, having done so in the past, and that it is her fair share in the market. With such a mass of evidence prepared for presentation, there is every reason to believe that the advocates of Federal control in other states will be a little more cautious in advancing this program which would certainly cause a decline in the market for crude from other mid-continent fields.

The meeting will be held at the Blackstone Hotel, and since it is the first meeting to be held in Texas in more than a year, and because general conditions are not as satisfactory as they could be, a large delegation of oil operators is expected to attend the meeting and take advantage of the opportunity to confer with the conservation officials from several states at one meeting.

Allowable Picture

Illinois independents prepare to oppose conservation enactment . . . Unconnected well situation likely most important subject at Texas statewide hearing

Illinois independents oppose conservation

In a move to defeat oil proration legislation, which is expected to be introduced in the Illinois legislature when it convenes in regular session January 4, a mass meeting of independent operators and royalty owners was called for late last week (Friday, December 9) to launch an organized campaign against such proposals.

Principal speaker at the meeting, scheduled for the Centralia Township High School, was to be Lieutenant Governor John Stelle, while R. J. Branson, state representative from Marion County, was to preside. The meeting was called by the recently organized Illinois Independent Oil Producers and Royalty Owners Association.

In announcing the meeting, the association declared oil regulatory measures "will limit production and thus force producers and land owners in Illinois to wait years for oil money which they are entitled to receive now, and will hamstring Illinois' development to the advantage of other oil-producing states and certain oil interests." The meeting was described as "one of the most important mass meetings of Illinois citizens ever called."

"Certain large oil interests want proration in Illinois because they have extensive oil developments in other states, and want to use and sell their oil from other states while Illinois oil is held in the ground for years until they are ready to use it," the statement continued.

Calling attention to proration laws in Oklahoma, Kansas, Texas and other oil producing states, it added that "many of the land owners and particularly the smaller producers in these states are thoroughly dissatisfied with such laws because they have proved to be detrimental to their interests.

"These states would like to see proration laws passed in Illinois so Illinois might be weakened as an oil competitor with them. These states will encourage in every way possible the passage of such laws in Illinois."

Thompson complains of unconnected wells

While the problem of refinery operations will be considered at the statewide hearing in Austin next Monday, December 12, it is probable that the most important question to be disposed of is that of unconnected wells and wells subjected to pipe line pro-

ration. While the commission's power over refining operations is not clearly defined, control over producing problems is conceded to be within the scope of its authority.

It was this problem that led Commissioner Thompson to complain last week of the failure of Sinclair Prairie Oil Company and Continental Oil Company who had "to join the volunteers" in an effort to build up connections and 100 percent allowable to every producer in the K-M-A field.

"We have been trying for some time to put an end to pipe line proration and selective buying in Texas," Thompson said.

"Up in North Texas in K-M-A field the pipe line buyers have been purchasing only 65 to 80 percent of the allowable production in that field as set by the Railroad Commission.

"The Texas Company is the principal buyer in that field. They are buying 8100 barrels per day from that field at this time. The other buyers in that field are the Sinclair Prairie Oil Company, who is taking only 65 percent of the allowable, and Gulf Oil Corporation, Magnolia Petroleum Company and Continental Oil Company, each taking 80 percent of the allowable from the wells to which they are connected.

"The Texas Company agreed to increase their takings from 80 percent to 100 percent of the allowable, provided that they could be relieved of the 120 wells, by getting the other buyers to take the oil from those wells. The Gulf company agreed and has taken over 50 of those wells. The Magnolia company agreed to take 30 of them. The Sinclair Prairie and Continental companies replied that they could not use any more oil from that field. I am hopeful that these companies will find some way to come along and do their part in this effort.

"Today I am informed by The Texas Company that they do not want the oil, and do not need it, but that in order to help clear up this situation and help end pipe line proration, that they will take 100 percent of the allowable on the condition that they will increase their takings 1200 barrels additional oil per day for the next sixty days, in the hope that some permanent plan can be worked out during that time.

"This voluntary action on the part of the Texas, Magnolia and Gulf companies is deeply appreciated. Such cooperation will help solve our prob'ems in 'se'ective buying.' I believe this is the end of pipe line proration in Texas. The Texas Company deserves praise for taking the lead in its solution.

"This means that every well in K-M-A, except those connected to Sinclair Prairie and Continental, will be able to sell 100 percent of its allowable. I hope the Sinc'air and the Continental will see the light and come along and cooperate."

Condensate Hearing

Placed at the heel of the docket is a recessed hearing on condensate wells, a continuation of that hearing held in Austin on November 30. Also to be considered is the problem of sweet gas proration in the West Panhandle field, and the additional evidence the commission expects to take after the statewide hearing is intended to form the basis of a new proration order in that area. This order, in all probability, is to become effective as of January 1.

Kansas strippers seek way out of troubles

Stripper wells in southeastern Kansas should not be subject to proration, Harold B. Fell, Ardmore, Oklahoma, executive vice president of the Independent Petroleum Association of America, told 200 producers and operators attending the annual meeting of the Kansas division of the organization November 30 at Wichita. Fell declared proration of stripper wells would be contrary to true conservation, which he described as "production of the greatest amount of oil at the lowest cost for the longest time."

A suggestion that the nation's oil wells be shut down for a period of 60 days to bring stability to the industry was made by W. F. Hopper, Hutchinson operator, who declared that Kansas producers were "not selling enough oil to buy postage stamps."

Russell Brown, Washington, D. C., IPAA counsel, declared the legal machinery was not at hand to bring about a total shut-down of production. "The police power to shut down oil fields rests with the individual states," he pointed out. "If all oil-producing states did not join in the shut down it would work to the disadvantage of those which did."

Discussing the trade agreement between the United States and Venezuela, Brown urged operators to contact their congressmen and urge against ratification, maintaining that further imports of crude oil would tend to drive down the price of domestic crude.

Fell told operators that special allowables were "neither sound, fair nor equitable," and added that each producer, each lease, each pool and each state is entitled to a fair and equitable share of the market at the prevailing market price. He maintained that many of the present ills of the industry would have been avoided if the industry had paid more heed to the crude oil market demand estimates of the United States Bureau of Mines than to nominations submitted by purchasers.

"In March, 1937, the association pointed out that too much crude oil was being produced," Fell said. "Figures now reveal the Bureau of Mines estimated within one percent of the consumer demand for 1937. If the industry had followed those estimates, we would be in a much better statistical position today.

"There are still many inequalities in the petroleum industry that need to be solved," he added, "but with your continued support and cooperation they are possible of solution. Oil is the propulsive force of our economic life and everything possible should be done to protect this, the greatest of all our natural resources."

Set Oklahoma proration hearing for December 22

Hearing to determine demand for oil from Oklahoma fields in January will be held December 22. At that time the Oklahoma Corporation Commission also will consider rules and regulations for determining potentials of class C fields for the first half of 1939.

Wages and Hours

Drilling contractors are not exempt from provisions for wage and hour standards, administration decides

Concerns engaged in contract oil drilling are not "service establishments" exempt from the wage and hour provisions of the Fair Labor Standards Act, it is held in a ruling prepared last week by the general counsel's office of the Wage-Hour administration.

While the act provides for the exemption of "service establishments, the greater part of whose servicing is in intrastate commerce," it was held that the definition did not extend to a large group of activities, the ruling pointing out that "service establishments are usually local in character and render a service to the ultimate consumer for direct consumption. The service is usually purchased in small quantities for private use rather than for industrial or business purposes."

It was explained that the ruling was issued to cover a question raised in numerous letters which have been received from well-drilling contractors, supply houses, banks, printing establishments and others.

"Each asserts that it is engaged in rendering 'service'," it was commented. "Although we recognize that the foregoing companies perform 'services,' it is nevertheless our opinion that such enterprises are not, in the ordinary case, sufficiently similar in character to retail establishments to be considered 'service establishments' within the meaning of Section 13 (a) (2).

"In a broad sense every business performs 'service' yet no one wou'd seriously urge that all types of businesses were eligible for exemption under Section 13 (a) (2). It would be surprising, indeed, if Congress had intended by the one word 'service,' as used in the phrase 'retail or service establishments,' to grant an exemption broad enough to include all of the abovementioned c'asses of businesses, and there is nothing in the legislative history of Section 13 (a) (2) to support such a conclusion."

It was pointed out that the section carried a long list of specific exemptions which "manifests a studied effort on the part of Congress precisely to designate the classes of employees to be exempted by the statute." Accordingly, it is argued, caution should be exercised in attempting to stretch the provisions of the section "so as to cover cases which were not patently intended to be included or which could have been designated easily and accurately in a specific exemption."

Market Situation

Well outputs in 12 Illinois fields cut by purchaser . . . California hopes to avert market collapse by reduced production . . . Some crude prices lowered

Market outlook is good despite price changes

The oil industry's markets appear fairly firm, despite the fact that last week brought some further evidence of unsettled conditions in the crude oil market.

At least partially compensating for the several reductions of crude prices were a few instances in which gasoline and kerosene tank car quotations were raised in the Mid-Continent.

Thus the market as a whole has remained in about the same position as a week ago, and it is giving some promise of improvement.

The industry now is carrying on its operations, at wells and refineries, at moderate rates, as relatively low allowables are in effect in the fields, while the refining division is showing willingness to cooperate by holding crude runs down to economic levels.

Through benefit of the sensible regulation of crude output and refinery activity, above ground inventories of oil are being favorably affected.

Crude oil storage has been steadily reduced, and at the end of November was at a new 17 year low.

Gasoline Situation Better

The relatively low refinery throughput is making it possible to further improve the gasoline inventory situation. Gasoline stocks now are lower than at this time last year, although the outlook for consumption is better than a year ago. The latest weekly statistics showed only a comparatively small addition to the gasoline stocks, although a substantial increase would have been normal at this time of the year.

The improved inventory situation probably is partly responsible for the lately increased steadiness of the gasoline market.

The fuel oil situation also is favorable. Prices are firm, as consumption of heating oil has been stimulated by colder weather, while demand for the heavier, industrial fuels is expected to improve as the current business recovery progresses. Fuel oil stocks remain comparatively large, despite recent heavy withdrawals, but the supply generally is regarded as not excessive, in view of the prospective demand.

Kansas producer group takes over 200-mile system

Assurance of a market for part of the stripper well production of Montgomery County Kansas came last week when the Montgomery County Producers Association bought 200 miles of gathering lines from the pipe line division of Sinclair Refining Company. The transaction involved a contract with Sinclair Prairie Oil Marketing Company whereby the producers will deliver oil to a given point for pipe line acceptance.

Purchases in twelve Illinois fields restricted

Reduced production allowables of some of the most important oil areas in the Illinois Basin were made effective December 4 by Sohio Corporation, a unit of Standard Oil Company of Ohio, and one of the largest crude buyers in the basin. The company restricted its runs from 12 fields to top allowables per well, ranging from 20 barrels to 40 barrels daily.

Well connections in the Centralia field were cut to 20 barrels daily per well. A quota of 30 barrels daily per well was allotted the Salem (Centralia Lake), Dix, Beecher City and Loogootee fields. Wells in the following fields were prorated to a top allowable of 40 barrels daily: Ina, Clay City, Noble, Olney, Flora, Fairfield and Burnt Prairie.

The Sohio Corporation notified its connections that the reduction in purchases was necessitated by the loss of outside crude markets and reduced refinery runs resulting from seasonal decline in gasoline consumption.

Magnolia Petroleum Company, which is handling its controlled production in the Salem-Lake Centralia district, is restricting its runs to 50 barrels daily per well.

Californians will meet to prevent market collapse

In a move to prevent the current stabilized crude market from cracking wide open due to excessive production, a meeting to discuss ways and means of reducing California overages will be held December 13, at Bakersfield. This is the result of a joint call issued by the Independent Oil Producers Agency, the San Joaquin Valley Producers Association and the Oil Producers Agency.

The combined efforts of these three organizations will endeavor to bring the state's crude yield down to at least 600,000 barrels daily by January 1. Statistics revealed that the year will show storage amounts to 30,000,000 barrels, which is an oversupply of 92,200 barrels daily. The state is running about 60,000 barrels daily over the desired level. Fear was expressed by spokesmen of the petroleum industry that should over production continue indefinitely, it would be an excellent opening for the government to step in with complete control.

A week ago, Standard Oil Company of California released a statement to the effect that unless crude production was drastically cut, a new crisis would soon enter into the picture that might upset the present stability of the market. Statistics were furnished to show that California production was running approximately 7 percent in excess of demand, and while this was not large, it added, nevertheless, 28,117,000 barrels to supply of oil that could not be sold, and which increased stocks to 161,713,000 barrels at the end of October, or 21 percent for the year to date.

Crude prices lower but gasoline better

Some changes in prices in the oil industry have occurred within the past week, affecting both crude and refined oils, the revisions having been downward in some instances and upward in others.

The changes in the crude oil market were all reductions, and affected fields of Oklahoma and Texas.

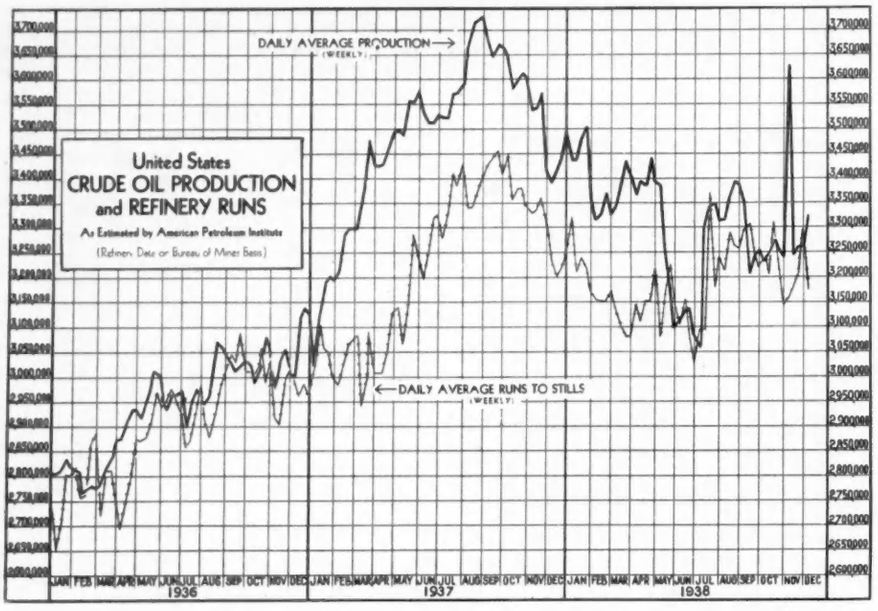
Crude Postings Reduced

Ben Franklin Refining Company, independent refiner, lowered prices 8 to 16 cents a barrel in the Healdton and Hewitt pools of Southern Oklahoma December 7. The company's new schedule begins with 24-24.9 gravity crude at 64 cents and ranges up by 2 cent differential to 84 cents for 34 gravity and above. These prices are 14 cents lower than those currently posted by Standard Oil Company of Indiana for those grades.

In announcing the lower prices for Healdton-Hewitt crudes, Sidney Born, president of Ben Franklin company, explained that other refiners were buying crude of equal or better quality in other Mid-Continent fields at 4 to 20 cents a barrel less than his company's old prices. He said that the cut resulted from these competitive conditions and the "constantly declining market for refined oils." He expressed hope, however, that the conditions would be only temporary, and promised that the company would raise prices back if justified in doing so by a return of normal markets. The price reductions were made, it was explained, after consultation with producers. Other alternatives were further curtailment of purchases or shutdown of the refinery. The company had cut its crude purchases 20 percent to about 2500 barrels daily on December 1.

Eliminate High Gravity

Two major purchasers, Humble Oil & Refining Company and Magnolia Petroleum Company, last week abandoned gravity scale postings on light crudes, between 40 and 45 gravity, in several districts of Texas, after other purchasers had declined to follow their example in paying better prices for the lighter oils. As in the schedules of other companies, the Humble and Magnolia postings now stop at "40 gravity and above," all the oils above 40 gravity taking that top price, whereas the grading previously extended to "45 gravity and above." The effect of the revisions was to cut 41-41.9 gravity 2 cents a barrel and lighter oils more, with a maximum reduction of 10 cents involved for 45 gravity and above. The districts affected by the Humble



and Magnolia revisions included North and West Central Texas, the Texas Panhandle, and high gravity fields of the Texas Gulf Coast and Southwest Texas.

The new Humble and Magnolia prices are the same as the schedule published in these columns December 5, 1938, page 58, except that "40 and above" is the top classification, with that top posting the same as that previously shown for 40-40.9 gravity; the former prices for 41-41.9 and higher gravities having been eliminated.

Refined Products

Very few changes have occurred in the prices for refined products in the past week, but the few that were involved were increases and affected gasoline and kerosene. Natural gasoline prices also were up, to the extent of ⅛ to ¼ cent a gallon.

Among the changes in refined gasoline prices was a ⅛ cent improvement in the minimum quotations on third grade in the Oklahoma market.

Kerosene also showed some strength, and the bottom price at Oklahoma refineries was ⅛ cent a gallon better than a week before.

Natural Gasoline

Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets f.o.b. refineries at 3½ cents a gallon, and sales were reported at 3¼ cents f.o.b. Breckenridge, Texas.

Gasoline Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 3¾ to 4½ cents a gallon; 63 to 66 octane, 4 to 4⅝ cents; 67 to 69 octane, 4⅛ to 4¾ cents; 70 to 72 octane, 4½ to 5¼ cents.

Corresponding prices in the Chicago market were 3⅜ to 4 cents, 3⅝ to 4⅝ cents, 3¾ to 4¾ cents and 4 to 4⅞ cents.

In East Texas the most common gasoline, 60-62, 400 end point, was priced generally at 4 cents a gallon.

Standard Oil Company of Indiana announces that the octane rating of its third brand gasoline, Stanolind, will be increased to 67 by the L-3 method as soon as the necessary arrangements can be carried out.

It is intended to make the improved product available as quickly as possible throughout the entire middle-west, commencing with those states where distribution may be readily accomplished, which are Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Kansas, Missouri and South Dakota. This will result in North Dakota, Oklahoma, Colorado, Wyoming and Montana being taken care of somewhat later.

The improved product will be available for distribution both through dealers and to consumers.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3¾ to 4¼ cents and 3¾ to 4⅜ cents.

Fuel Oil Quotations

Fuel oil prices were not materially changed in the past week. In the Chicago market range oil was priced from 3¾ to 4 cents a gallon. The No. 1 white oil was priced from 3⅝ to 3⅞ cents, and No. 1 straw from 3⅝ to 3¾ cents. No. 2 straw was 3½ to 3⅝ cents. No. 3 oil was 3¼ to 3⅜ cents. No. 5 oils were 60 to 70 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Favorable conditions shown by statistics

Continued moderate crude production, more economic refinery runs, and satisfactory inventory situations were reflected in the latest weekly statistics of the oil industry, the figures having been predominantly favorable.

United States crude oil production came down about 35,000 barrels in the week ended December 3 in averaging 3,223,650 barrels daily. It was 4.8 percent lower than in the corresponding week last year.

Crude oil runs to stills in the week of December 3, averaging 3,175,000 barrels daily, were down sharply from the

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 19	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	150,468,000
October 1	3,231,800	3,235,000	280,852,000	68,602,000	151,759,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	153,719,000
November 5	3,628,550	3,160,000	275,217,000	68,236,000	154,576,000
November 12	3,243,250	3,180,000	273,394,000	67,551,000	*154,666,000
November 19	3,255,800	3,230,000	271,955,000	67,624,000	153,971,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	153,634,000
December 3, 1938	3,223,650	3,175,000	.....	69,155,000	151,617,000
December 4, 1937	3,387,000	3,230,000	†304,156,000	70,193,000	121,319 000
Change in past year	—4.8%	—1.7%	—11.0%	—1.5%	+25.0%

* All time peak. † Stocks, November 27, 1937.

3,295,000 barrels of the previous week, and were 1.7 percent lower than in the comparable week last year. At the reduced level, the runs were fairly near to the indicated economic requirements.

Gasoline Situation Aided

With the refinery output held down, there was a favorable effect on the gasoline situation, the gasoline inventories having been increased only about one half million barrels, a relatively small gain for this time of the year. Normally, the industry is adding substantially to gasoline stocks at this season. In the week ended December 3 the gasoline storage was raised from 68,628,000 to 69,155,000 barrels. At the latter level it was, however, 1.5 percent smaller than at the corresponding time last year.

Colder weather has brought heavy consumption of furnace oil, and the total stocks of gas and fuel oil were reduced approximately 2,000,000 barrels in the week ended December 3, having come down to 151,617,000 barrels. Despite the decrease, however, those stocks were 25 percent larger than the supply held one year previously.

Crude oil inventories have been coming down steadily, and in the week ended November 26, latest period for which figures are available, they totaled only 270,563,000 barrels, a new 17-year low. That quantity was 11 percent smaller than the crude supply held a year before.

Crude Production

United States output gains 46,700 barrels daily to 3,255,050 barrels; 50,750 below bureau figure.

Crude oil production in the United States increased during the week ended December 10. The daily flow averaged 3,255,050 barrels, which exceeded the previous week's level by 46,700 barrels, but remained 50,750 barrels under the indicated market demand for December, as estimated by the Bureau of Mines.

California and the new pools in Illinois accounted for most of the increase, while Texas, Oklahoma and Louisiana registered slight gains. Kansas was the only major producing state to show a small decline during the past week.

Texas last week averaged 1,275,800 barrels daily, which was 5300 barrels more than in the previous week, but 68,100 barrels less than the Bureau of Mines estimate and 18,777 barrels less than the state proration order.

Oklahoma showed an increase of 8325 barrels, the average output having been 425,875 barrels a day. That was 74,825 barrels daily less than the federal allocation and 2125 barrels less than the allowable prescribed by the state.

California's output was up 16,000 to 662,200 barrels daily, where it was 72,500 barrels a day in excess of the Bureau of Mines estimate of demand and 47,200 barrels more than the recommendation of the Central Committee of California Oil Producers.

Louisiana increased slightly its production to 264,200 barrels daily, which was 3750 barrels a day more than in the previous week, 16,200 barrels more than the government forecast of needs and 16,320 barrels more than the state's proration order.

Kansas declined 540 barrels, averaging 147,800 barrels daily, which was 11,200 barrels less than the estimated market demand and 15,600 less than the temporary state allowable.

Texas report forms revised again

An order issued by the Texas Railroad Commission provides that operators now filing Forms EH-4A and EH-4B need no longer file Form SW-6.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Dec.)	State Allowable in Dec.	BARRELS DAILY FOR WEEK ENDED Dec. 3	Dec. 10
TEXAS—				
Texas Panhandle			63,400	63,800
North Texas			74,600	75,400
West Central Texas			31,100	30,900
West Texas			206,100	204,900
East Central Texas			90,300	91,800
East Texas Field			371,800	370,800
South Texas			226,400	223,700
Texas Gulf Coast			212,200	209,200
Total Texas	1,343,900	1,294,577†	1,275,800	1,270,500
CALIFORNIA—				
Long Beach			54,000	54,000
Santa Fe Springs			30,100	30,000
Huntington Beach			31,000	29,500
Dominguez			27,400	26,000
Ventura Avenue			34,000	34,500
Midway-Sunset			50,700	47,000
Kettleman Hills			59,000	59,000
Wilmington			97,400	95,400
Others			278,600	270,800
Total California	589,700	615,000*	662,200	646,200
OKLAHOMA—				
Oklahoma City			91,800	77,550
Seminole Area			99,025	98,000
Fitts			32,450	35,800
Others			202,600	206,200
Total Oklahoma	500,700	428,000	425,875	417,550
LOUISIANA—				
North Louisiana			76,000	72,550
South Louisiana			188,200	187,900
Total Louisiana	248,000	247,880	264,200	260,450

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Dec.)	State Allowable in Dec.	BARRELS DAILY FOR WEEK ENDED Dec. 3	Dec. 10
KANSAS—				
Burrton-Haven			8,775	8,125
Russell County			20,975	21,300
Silica			9,100	9,750
Others			108,950	109,165
Total Kansas	159,000	163,400‡	147,800	148,340
NEW MEXICO	100,300	98,285	107,300	106,200
MICHIGAN	51,000		50,900	51,600
ARKANSAS	51,600		49,625	48,600
MOUNTAIN STATES—				
Wyoming	76,100		53,900	54,850
Montana	12,600		12,950	13,600
Colorado	3,900		3,800	3,750
Total Mountain States	92,600		70,650	72,200
EASTERN STATES—				
Pennsylvania Grade			67,500	65,700
Southern Illinois (New Pools)			98,200	85,300
Illinois-Indiana (Old Pools)			12,900	13,100
Others, Eastern			22,100	22,600
Total Eastern States	169,000		200,700	186,700
Total United States	3,305,800		3,255,050	3,208,350

† Daily average; with the exception of Saturday, Dec. 17, shutdowns are ordered for all Saturdays and Sundays during December.
* Recommendation of Central Committee of California Oil Producers.
‡ November allowables; December allowables are not yet available.

O. W. Jones elected head of Petroleum Electric Club

Election of officials closed the tenth annual meeting of the Petroleum Electric Power Club December 9. Those elected are: O. W. Jones, president (Central Power and Light Company, Corpus Christi); H. E. Roberts, secretary-treasurer (Empire District Electric Company, Joplin, Missouri); E. A. Armstrong, vice chairman (Public Service Company of Northern Illinois).

New directors to serve two years are: K. C. Johnson (Arkansas Power and Light Company); G. A. Coleman (Public Service Company of Oklahoma); P. M. Cordell, Duane Landon and W. G. Moore (Texas Power & Light Company, Dallas).

Holdovers for one year are: F. A. Graham, W. H. Stueve, G. H. Weckel, E. A. Armstrong and J. E. Elliott.

The program was devoted to the general theme of electric power for the petroleum industry. Registration began December 7 and an informal conference that evening preceded the program, December 8.

Fred W. Insull, president, Public Service Company of Oklahoma, Tulsa, gave the address of welcome Thursday morning. This was followed by a resume of the history of the organization, "After Ten Years," by Don McKee, manager of the Empire District Electric Company, Joplin, Missouri. The morning program was completed by Jerry Robertson, power engineer of the Public Service Company of Oklahoma, Tulsa, whose subject was "How the Power Company Can Help the Oil Producer." Then came a general discussion of the use of electric power for production.

The afternoon session first heard George Isley, engineer of Shell Petroleum Company on "Why Power Utilities Fail to Secure More Oil Pumping and Production Loads in the Oil Fields." Discussion on this subject was followed by general consideration on "Electric Power for Pipe Line Pumping," a subject that drew a period of discussion. Another subject considered generally was "Electric Power for Pipe Line Pumping." Discussion on this was led by Stanley Learned, chief engineer, Phillips Petroleum Company. "Electrification of Oil Refineries," was the subject of K. K. Kreamer, Houston Lighting and Power Company, Houston.

The banquet Thursday evening had O. A. Jennings, vice president, Oklahoma Gas & Electric Company, as toastmaster. Judge Kirt Logsdon, Tulsa, was the banquet speaker.

Program for the second day was devoted to consideration of equipment for oil field use with representatives of manufacturing concerns before the group. Oscar Hass, Allis Chalmers Manufacturing Company, discussed "Benefits of Variable Speed Drives," followed by general discussion. "Submergible Electric Pumps" was the subject of P. E. Loye, Reda Pump Company, Bartlesville. A. L. Jones, General Electric Company, was heard on "Industrial Control Equipment for the Oil Industry."

One subject in the afternoon completed the program, "Electric Power Applications," by B. H. Berkeley, Westinghouse Electric & Manufacturing Company.

The report of the advertising committee was made by W. H. Stueve, Oklahoma Gas & Electric Company, Oklahoma City; treasurer's report, H. E. Roberts, Empire District Electric Company, Joplin; the report of the nominating committee by E. A. Armstrong, Public Service Company of Northern Illinois, Chicago; and the progress report of C. N. Robison, vice president, Public Service Company of Oklahoma and president of the association.

Pipe Line News

Hope gets contract for K-M-A oil in England, and operators extend firm's option . . . Turner Valley line through Montana to Pacific Coast is proposed

K-M-A operators grant extension on pipe line deal

Hope Engineering Company, which has been negotiating with K-M-A field operators since last summer to finance and construct an 8-inch crude line to the Texas Coast, has been granted an extension of four months to start work on the project.

The operators gave the firm an option to transport and market the crude allowable of 300 deep wells, supported by 13,000 proved acres for a period of five years. This option expired December 6, and has since been extended to allow more time for lining up foreign crude contracts.

B. E. Hepler, an official of Hope Engineering Company, which maintains headquarters at New York City, recently returned from England, where contacts were made with prospective buyers of the high gravity oil that will be available from the K-M-A field.

Arrangements are to be made at present by the group sponsoring the trunk line outlet to gather 2000 to 4000 barrels of oil daily in the K-M-A field, and ship the oil in batches through a major pipe line to the coast on a common carrier basis. The oil would be consigned to the prospective long term purchasers.

D. H. Bolin, Wichita Falls operator, is head of the independent group that have pledged support to the trunk line, which would involve about 400 miles of 8-inch pipe, and cost approximately $10,000,000.

Turner Valley outlet to Pacific Coast proposed

Interest in proposed construction of a crude oil pipe line for transportation of the product of Alberta (Canada) and Montana (United States) fields to the Pacific Coast to supply markets at Bellingham, Seattle, Portland, Everett and Vancouver is growing among operators on both sides of the international boundary. Producers in both Montana and the Canadian province are cramped for a lack of market.

Such a line, according to plans under consideration, would run south from Turner Valley connecting with minor fields in the southern part of the province and then into Montana to tap the Cut Bank and Kevin-Sunburst fields. From Montana, the line would run west to Bellingham, Washington, on the coast.

The proposal is the third in recent months to broaden the market for Alberta crude, and the first that contemplates joint action by Canadian and American operators. Several months ago Tropicorp, Inc., a German firm offered to construct a line from Turner Valley to Vancouver, with payment for same to be made with crude oil. There then followed communications from London regarding construction of a line with British capital which would figure in the British Empire's defense program. Negotiations on the latter proposal are still in progress, while it is generally conceded that the German proposal will not be carried out.

The unfavorable marketing situation now faced by Montana and Alberta operators is the direct result of the rapid development of the Turner Valley field on the Canadian side of the international boundary. Demands of Canadian operators for preference in the prairie province market when proration was first instituted in Turner Valley over a year ago brought discontinuation of purchases of Montana crude by Canadian buyers, notably Imperial Oil Company, Ltd., and the British American Oil Company, Ltd.

Increased purchases of Canadian crude that resulted, however, were more than offset by the continued growth of the Turner Valley field, which at present is held to about one-fourth of its capacity yield.

Plan 35-mile gas line in Michigan

American-Michigan Pipe Line Company, affiliate with American Production Company, this week made application with the Michigan Utilities Commission for a permit to construct gathering lines in the new Freeman-Lincoln gas area of Clare County and connect the field with its Austin pool-Muskegon main line. About 35 miles of main line would be required to tie the new area into the Muskegon line. The commission set December 16 as the hearing date.

The field, opened this year and developed on only a few scattered locations, chiefly where tests were drilled for oil, is under lease committment mostly to Taggart Brothers, Gulf Refining Company, Pure Oil Company, and American Production Company. Gas is from the Stray sand at approximately 1550 feet.

WEEK'S DRILLING HIGHLIGHTS

Southwest Texas

Having passed through 4200 feet of heaving shale, a well in Nueces County is still in the shale while drilling at 13,150 feet. In the Sun pool of Starr County, production has been established from the Vicksburg formation.

East Texas

Nine tests are planned to follow recent completion of an oil well in the gas-distillate area around Joaquin in Shelby County.

West Texas

A new era of development is in prospect following discovery of flowing oil production from the lower Pennsylvanian in Garza County. The strike is well removed from other production and Gulf Oil Corporation, the discoverer, has a well consolidated block of 150,000 acres under lease.

Kansas

Three new pools are indicated by showings of wildcats in the western section of the state. A wildcat in Harvey County flows 254 barrels on potential test.

Oklahoma

Expansion of three recent Wilcox sand discoveries was in doubt as the week closed. Continued slowing down of work is noted.

Arkansas

Indications that two wildcats will produce are reported from cores in the Permian lime.

North Louisiana

Plan is announced for a Permian test to go to 12,000 or 14,000 feet at Cotton Valley where production is had at 5600-5900 and 8100-8600 feet. Another failure was reported in the Shreveport area and only one new test was started.

South Louisiana

Two new oil fields were established: at Lake Verret, St. Martin Parish, and Golden Meadows, Lafourche Parish, and another is in prospect at Henderson in St. Martin. A new sand was uncovered at Tepetate.

Texas Gulf Coast

While Mt. Houston, Harris County, is considered definitely an oil field, some trouble is delaying completion of the discovery well. The second well is being completed at League City, a half-mile west of the discovery.

Michigan

Developments east and west indicate that the Bloomingdale producing area is much larger than early estimates indicated and it is possible that it will connect with the Columbia area, although there is one failure between.

New Mexico

Lovington wildcat completes as gas well while four tests for which it is responsible are drilling with various indications with reference to it. The much hoped for Milnesand wildcat in Roosevelt County is still going deeper with nothing yet to offer encouragement. Week's completions were routine and eight new tests were announced.

Illinois

A new pool is opened in Wayne County with a flow of 600 barrels the first 24 hours, while still another new pool is indicated by showings in a wildcat 5 miles west of production at Lake Centralia.

California

Kern County continues the center of interest with a wildcat that is showing symptoms of opening another oil field, while more important extension attempts are getting underway or are contemplated. At Signal Hill, Lovelady area, unconfirmed information is that a new and deeper sand is showing for production.

Comparison of Permits Granted for New Wells

STATE	Week Ending Dec. 10	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	7	12	237	235	240
California	10	34	1,105	1,528	1,584
Louisiana	15	54	1,188	1,205	1,227
Kansas	28	49	1,418	2,603	2,663
Michigan	28	43	911	932	958
Oklahoma	29	56	1,882	2,636	2,711
Texas	116	383	11,980	16,517	17,238
Total	233	631	18,721	25,656	26,621

Summary of Wells Completed in the United States Week Ending December 10, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	.....	.....	....	....	.....	2	2
Arkansas	9	4	....	5	1,302	217	138
California	22	17	....	5	22,814	1,206	1,397
Colorado	.....	.....	....	....	.....	10	18
Florida	.....	.....	....	....	.....	.....	1
Georgia	.....	.....	....	....	.....	1	.....
Illinois	79	65	2	12	15,781	1,835	361
Indiana	8	2	....	6	25	161	146
Kansas	31	24	....	7	28,236	1,602	2,579
Kentucky	13	7	5	1	415	780	541
Louisiana	31	18	6	7	4,772	1,033	951
Michigan	22	11	....	11	3,060	954	906
Mississippi	.....	.....	....	....	.....	19	15
Montana	.....	.....	....	....	.....	75	193
Nebraska	.....	.....	....	....	.....	1	.....
New Mexico	17	13	1	3	4,563	512	655
New York	*11	10	1	....	27	*634	*1,192
North Dakota	.....	.....	....	....	.....	1	1
Ohio	18	5	4	9	129	899	1,425
Oklahoma	29	20	3	6	9,849	2,004	2,829
Pennsylvania	*25	22	1	2	31	*1,912	*2,843
Tennessee	.....	.....	....	....	.....	2	.....
Texas	245	165	23	57	228,336	11,819	14,491
Utah	.....	.....	....	....	.....	4	1
West Virginia	8	1	5	2	3	668	935
Wyoming	.....	.....	....	....	.....	103	102
Total this week	568	384	51	133	319,343	26,454	31,721
Total last week	499	344	38	117	225,865	.....	.....
Total this year	26,454	18,324	1,906	6,224	16,388,465	.....	.....

* Includes water-intake and pressure wells.

Illinois Developments

New pool opened in Wayne County with 600-barrel flow. Another new pool indicated west of Lake Centralia field.

Olney, Ill.—Roch & Volles' McPherson 1, Section 4-2s-7e, Big Mound Township, two miles west of Fairfield, opened a new Wayne County McClosky pool when it blew in on drilling plugs and swabbed and flowed 600 barrels on its initial 24-hour run. The wildcat had 12 feet of McClosky pay and is bottomed at 3269 feet. It is 900 feet northeast of the dry and abandoned H. H. Weinert, Inc.'s Sprague 1, Section 4-2s-7e.

Another new pool was indicated by Pyramid Oil Company's R. O. Roddy 1, Section 20-2s-3e, Stevenson township, Marion County, five miles east of production in the Lake Centralia field, which cored 14 feet of Rose Clare saturation below 2400 feet. It was waiting on cement after running pipe to the top of the formation.

Kesl-Fox's Maibaum 1, Section 12-3n-3w, Wheatfield township, northern Clinton County, was being cleaned for tubing and rods after which a pumping production test was to be made. While there is some water present, operators hope to complete the wildcat for an initial of from 50 to 75 barrels daily. Eight feet of Benoist sand was cored a week ago from 1154 to 1162 feet, corrected depths.

A. P. Muhlbach's A. B. Anderson 1, Section 2-1s-8e, Jasper Township, may open a new Wayne County pool. It recovered a seven-foot fair McClosky core at 3085 feet and casing was being set.

A. C. Leathers et al's R. King 1, two miles south of Curran and first test in Sangamon County, was being prepared for acid treatment after coring a 21-foot "commercially favorable" Trenton lime saturation below 1798 feet.

The rambling eastern Fayette County pool was further defined last week when Rosenthal & Mylius, Feezel 1, Section 8-6n-3e, Wheatland township, ¾-mile southeast of the dry Jarvis Brothers test on the Walnut Grove School acreage, found only slight oil shows in the Stein and Benoist sands, neither sufficient to make a well. It was abandoned at 2000 feet. Dry holes in Otego and Sefton townships also aided in defining the limits of this pool. Zephyr and Bell Oil & Gas Company's Stine 1, Section 18-7n-2e, Otego township, was taken to 1920 feet, while Papoose Oil Company's Dycus 1, Section 18-7n-2e, Sefton township, was drilled through the McClosky depth. Many tests have been carried to the McClosky level in this area but all without success. Production is obtained from the higher Bethel and Cypress sands.

Helmerich & Payne's P. O. Anderson 1, Section 34-2n-2e, Salem township, Marion County, east outpost of the Lake Centralia pool, flowed 40 barrels in 3 hours last week. Production is from the McClosky, topped at 2108 feet. A short distance south and east, a squeeze job was being run at Hawley Oil Company's Wright 1, Section 3-1n-1e, where operators are attempting to make a well in the Benoist.

The new Lawrence County gas field attracted more than its share of attention last week when a record-breaking well was drilled and another highly successful completion extended the field ¼ mile east, making the proven area a mile square. The big well was Kesl & Fox's Scott Gray 2, ¼ mile east of the discovery well on this farm, which gauged 21,600,000 cubic feet when 3 feet of Buchanan sand was penetrated. The extension test was Kentucky Natural Gas Company et al's Carpenter et al 1, Section 7-4n-10w, which gauged 15,217,000 cubic feet when bottomed at 1101 feet. On the west side of the pool, Hoeffkens & Willis' Citizens Trust 1, Section 13-4n-11w, ¼ mile south of the abandoned Herbst & Fox's Shaw & Gee 1, was completed with a gauge of 3,500,000 cubic feet. The recently discovered field now numbers 11 wells, all in Russell Township, and having a combined potential production of over 140,000,000 cubic feet of gas daily. Kentucky Natural Gas Company is taking the gas.

In northeast White County, near Centerville, Sun Oil Company's R. Brown 1, Section 12-4s-9e, Burnt Prairie Township, was deepening below 3500 feet after passing through a dry McClosky.

Illinois Nomenclature group clarifies names

An oil field Nomenclature Committee has been appointed to straighten out the confusion in names used for the newly-discovered fields in the Illinois Basin. The committee is composed of A. H. Bell, representing the State Geological Survey, John Asbury, representing the Illinois Scouts Association, and B. M. Miller, representing the Illinois Geological Society.

The committee has used established geographic names wherever possible and in every case has recommended the names preferred by the discovery company. In general, the names recommended by the committee are identical to the names currently used by the State Geological Survey, the Illinois Scouts Association, and other organizations concerned with the present development in Illinois. The exceptions are noted as follows:

"Salem" is the name recommended by a majority of the nomenclature committee for the field discovered by The Texas Company's Tate 1, Section 5-1n-2e, Marion County; but inasmuch as the State Geological Survey has already applied the name "Lake Centralia" in publications and has the duty of keeping public official records clear, the survey will in the future use the name "Lake Centralia—Salem."

"Louden" is the name recommended by a majority of the nomenclature committee for the field discovered by Carter Oil Company's Mary Miller 1, in Section 12-8n-3e, Fayette County; but inasmuch as the State Geological Survey has already applied the name "Beecher City" in publications, it will in the future use the name "Beecher City—Louden."

The name "Centralia" is recommended by a majority of the nomenclature committee to apply to the new field

ILLINOIS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure Oil Co., E. E. Weiler 7	219	3062
C. R. Bunn 3B	159	3105
Clinton County—		
Shell Petroleum Corp., Criley 9	142	1371
Allison 10	75	1382
Adams Oil & Gas Co., Stead 2	23	1375
Ed Robinson, E. Patton 1	35	1380
Fayette County—		
Texas Co., Chrisman 1	132	1620
Magnolia Petroleum Co., Clow 5	230	1593
Clow 7	300	1560
J. E. Mahee Drilling Co., Lay 1	175	1484
Carter Oil Co., N. Townsend 1	114	1591
McCormick 1	130	1585
Matson 2	781	1531
Ann Hopper 1	167	1556
H. Klein 1	490	1523
B. Kimbrell 2	101	1590
J. Dial 3	650	1580
C. F. Steele, A. Arnold 1	150	1548
Sherman et al, Burtschi 9	150	1603
Luttrell & Holleman, R. R. Right-of-Way 1	150	1490
Doran & Haynes, C. H. Moore 1	*	1640
Minerva Oil Co., Tish 7	40	1612
Continental et al, Bartlett 1	*	1775
Hancock County—		
Callihan et al, J. D. Hall 1	*	568
Jefferson County—		
Carter Oil Co., Allen 1	230	1954
Benedum-Trees Oil Co., Jefferson Oil & Gas Co. 1	20	2958
Lawrence County—		
Herbst & Fox, Brown & Null 1	¶16.00	1140
Herbst et al, C. L. Pinkstaff 1	*	1120
Kentucky Natural Gas Corp., Hayes 1	¶9.00	1057
Madison County—		
C & A Development Co., Bohn 1	*	1080
Marion County—		
Centralia Coal Co., Fee 5	25	1219
Menhall, I. C. R. R. 9	30	1388
W. R. Curry, Hawthorne 1	225	1793
Texas Co., City of Centralia 2	150	1740
V. Kalkbrenner 1	350	1170
V. L. Foster 1	135	1818
V. L. Foster 2	146	1892
V. L. Foster 3	350	1795
V. L. Foster 4	200	1804
W. D. Fyke 2	125	1839
E. Luttrell 4	52	1908
F. Lee 1	159	1752
N. Lee 2	210	1769
W. Frederick 9	560	1763
W. Fossieck 3	700	1784
W. Fossieck 4	420	1775
W. Fossieck 5	280	1780
L. Dunning 3	1140	1782
H. Corbin 3	600	1683
T. Easley 2	400	1890
Roberts Bros., Pittenger 1	350	1797
Ohio Oil Co., R. L. Murray 3	83	1803
Rock Hill Oil Co., Foster 8	169	1839
Foster 4	190	1829
Superior Oil Co., A. Luttrell	31	2146
Mammoth Producers & Refiners, Bachman 6	155	1864
Kingwood Oil Co., Devor 3	168	1863
Devor 4	176	1900
S. Shanafelt 4	330	1812
Tide Water Associated Oil Co., Miller 2	135	1884
J. J. Deaner, Burge 4	*	1945
Magnolia Petroleum Co., W. B. Young 7	192	1814
W. B. Young 8	240	1818
S. Shanafelt 7	240	1779
S. Shanafelt 8	380	1748
J. R. Young 5	216	1774
J. R. Young 6	360	1783
D. A. Shanafelt 4	264	1793
Shell Petroleum Corp., Farthing 4	456	1790
Garnier Bros., Mulvaney 1	*	2850
Devonian Oil Co., Clyde Shanafelt 1	*	2560
Adams Oil & Gas Co., S. Pugh 2	25	1675
Conrey et al, Bilek 1	*	2211
Shelby County—		
A. A. Baker, Garrett 1	*	2009
Ogg & Joly, Jenkins 1	*	1900
Wayne County—		
Carter Oil Co., L. A. Skelton 2	401	3039
H. H. Weinert, Inc., Smith 1A	*	3443
Molan 4A	50	3303
Rock Hill Oil Co., Twist 3	250	3376

*Failures; †Junked; ¶Million cu. ft. gas.

in and adjacent to the City of Centralia. The State Geological Survey will continue to designate this field "Centralia (New)." The committee recommends that the names "Junction City" (Section 32-2n-1e), "Langewisch-Kuester" (Sections 3 and 4-1n-1w) and "Brown" (Section 16-1n-1e), Marion County, be continued as the names of small old pools defined in previous publications of the State Geological Survey.

The name "Aden" is recommended by the committee for the field discovered by The Texas Company's Silverman 1, Section 16-3s-7e, Wayne County.

"North Aden" is the name recommended for the field discovered by Weinert's Twist 1, Section 33-2s-7e, Wayne County.

Other recommended names for recently discovered fields, or fields in which there has been confusion of nomenclature, are listed as follows:

"South Noble": SW ¼, Tp. 3n-9e, Richland County. The South Noble field includes all producing territory contiguous to the Mammoth's McCauley 1, Section 28-3n-9e.

"North Noble": Sections 23 and 26, Tp. 4n-9e, Richland County. The North Noble field is the new producing area opened by Pure's Wakefield 1, Section 26-4n-9e.

"Olney": Producing area located in SE ¼, Tp. 4n-10e, Richland County.

"Schnell": Producing area located in Section 7-2n-9e, Richland County.

"Flora": Producing area opened by Kingwood's Graham 1, Section 13-3n-6e, Clay County.

"West Clay City": The name "West Clay City" is proposed for the producing area located in Section 12-2n-7e, Clay County.

"Clay City": The name "Clay City" has been applied in the past to the field located in Tps. 2n-8e and 3n-8e, Clay County. It is recommended that the name "Clay City" also include the producing area located in Sections 26 and 27-2n-8e.

"St. James": The name "St. James" is recommended for the producing area opened by Rosenthal's Washburn 1, Section 30-6n-3e, Fayette County.

"South Russellville": The name "South Russellville" is recommended for the new producing area located in and adjacent to Section 12-4n-11w, Lawrence County.

It is hoped that the names adopted by the committee will be accepted by producing companies, trade journals, scientific publications, and all organizations concerned with the Illinois development.

EASTERN FIELDS
Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
Ashland County—		
Ohio F. G. Co., Morris 2	¶.83	3085
Athens County—		
Gibson, Williams 1	*	1754
Gallia County—		
Bartlett et al, McCormick 1	*	2960
Guernsey County—		
Jewell et al, Baumbaugh 1	7	1274
H. P. Muhlbach, Stewart 12	*	1342
Jones & Jewell, Bair 1	*	1516
Licking County—		
Gordon, Moran 1	100	3093
Geo. Vandergrift, W. A. Connor 1	10	766
Early et al, Lothes 3	10	799
E. Ridgeway, Richards 2	2	795
Medina County—		
Phillips, White 1	*	617
Noble County—		
Heisler Drl. Co., Mason 1	*	1343
Atkinson O&G Co., Atkinson 1	*	1810
Perry County—		
Big Run O&G Co., Weaver Hrs. 4	¶.70	1171
Seneca County—		
Sun, Zeis 1	*	2091
Washington County—		
Totman Co., Totman 1	¶.28	1689
Bay Oil Co., H. J. Wenzel 1	*	1120
Wayne County—		
A. McCrea, Aukerman 1	¶.32	2838

WEST VIRGINIA

Cabel County—		
Arnold Gas Co., Childs 1	¶.20	3532
Thermal Gas Co., Perry 2	¶.13	2033
Calhoun County—		
Hope Nat. Gas Co., Cabot 7818	*	2088
Gilmer County —		
Ermlich, Goff Hrs. 2	¶.10	1636
Decker Drl. Co., Harvey 1	*	1950
Hancock County—		
James Crago, Crago 11	3	1250
Kanawha County—		
Pure, Williams Coal Co. 292	¶.50	3005
Wirt County—		
Godfrey L. Cabot, Fee 1	¶.05	3002

PENNSYLVANIA

Washington County—		
J. Foley & Co., Baldwin 1	¶.18	1200
Potter County—		
G. L. Cabot, Raymond 1	*	5332
Bradford District		
F. J. Eisert, Loop Estate	1	....
Crawford & Simon, Kinley Oil Co.	4	....
J. P. Kervin, Fee	½	....
Forest Oil Corp.	1	....
Niagara Oil Corp., 2 wells	2	....
Bradford Transit Co., 7 wells	7	....
H. E. Camp Estate, Lawton	1	....
Andrus & McDowell, 329 Bing	2	....
Bradford: Water (Pressure) Wells		
Penn Valley Crude Oil Corp., Redfield	...	....
Forest Oil Corp.	...	....
Butler-Armstrong District		
Campbell-Haverstraw et al, C. W. Bame	5	....
Smith & Co., William Neyman	2	....
Middle District		
Wasson & Fleming Co., Lot 3192	2	....
Galbraith-Mong & Co., Gertrude Mong	2	....
George Hugus et al, William Mellhattan	1	....
New York-Pennsylvania: Gas Field		
New York State Natural Gas Co., Parks Estate	*	....

NEW YORK

Allegany County —		
Bemont Quadrangle Drl. Co., Lampe 1	¶25.00	4936

*Failures; †Junked; ¶Million cu. ft. gas.

Kentucky

Hopkins County wildcat has showing in McClosky

Owensboro, Ky.—Gulf Refining Company's L. W. Schmetzer 1, 7 miles west of Madisonville, Hopkins County, recovered a 7-foot McClosky core below 2315 feet which, while tight, is expected to make a well. The wildcat passed through other saturations at 510 feet, 759 feet, 1610 feet and 1820 feet.

Three miles southeast of Morganfield, Union County, Sun Oil Company's Mills 1 was dry at 2246 feet and was being plugged.

Near Hopkinsville, Hopkins County, equipment was moving in for a test in an area that experienced a premature oil boom in 1920 when production was obtained at less than 1000 feet. Development lagged, however, when it was thought that commercial production could not be obtained.

In the new Spottsville pool of Henderson County, Magnolia Petroleum Company's S. Green 2 was drilling out cement plug at 2200 feet after coring a McClosky saturation. The well is not expected to be as big as S. Green 1, the discovery, which ranks as one of the largest in Kentucky.

Production of crude oil dropped in both Daviess and Henderson counties which share the Birk pool, last month as buying companies curtailed purchases because of a decreased market. Daviess County production in October was 70,519 barrels, compared with 83,528 barrels in September. October production was valued at $80,386.92 and September oil at $105,212.

Henderson County producers in October sold 68,521 barrels for which $77,020.95 was paid by purchasing companies. This compares with 87,949 barrels in September. Henderson County buyers during October, and the amount each took, were: Fordville Gathering Line, 41,300 barrels at $47,162; Aetna Oil Service, 22,454 barrels for $24,443; Ohio Oil Company, 4711 barrels for $5332, and Producers Pipe Line, 74 barrels for $82.

KENTUCKY
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Barnsdall Oil Co., Hawes 1	20	521
Evans et al, Cornell 2	*	867
Daviess County—		
Beasley Drl. Co., Bennett 1	200	1887
Carpenter et al, Sapp 1	150	1868
Major Oil Co., Harrington 2	¶1.00	1150
Hancock County—		
J. C. Ellis, Smith Heirs 24	10	....
Knott County—		
Mid-City Gas Co. & Ware, Fields 1	¶.70	1612
United Carbon Co., Cornette 1	¶.19	2743
Francis et al, Smith 1	¶.15	2855
Lee County—		
Birch, Angen 1	5	....
Martin County—		
Salyer, Fork 1	¶.90	....
Ohio County—		
Ohio, Foley 2	25	1157
Foley 3	5	1183

*Failures; †Junked; ¶Million cu. ft. gas.

Indiana

Find McClosky saturation in test on banks of the Wabash

Evansville, Indiana.—W. O. Allen's (Amis & Hughes) Cooper Estate 1, Section 13-32-14w, Wabash Township, Gibson County, cored two layers of porous McClosky lime, with the lower horizon between 2924-28 feet carrying a good saturation. The wildcat has been cased at 2888 feet, or 7 feet above the top of the first McClosky soft layer. Mud was delaying movement of a standard rig in to complete.

The wildcat passed through 19 feet of well-saturated sand between 2494 and 2514 feet, which may be the Benoist, Stein or Cunningham. The casing is to be perforated at this horizon and acid treatment given to the McClosky when the plug has been drilled out. Successful completion as a commercial well will insure lively development in the area, which is in south-

INDIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Greene County—		
Reed, Templeton Coal Co. 1	*	976
Perry County—		
Chas. E. Dice, Hempfling 8	15	538
Pike County—		
Jas. C. Ellis Trustee, Shawhan 4	10	1348
Claude L. Trusler, L. & L. Selby 1	*	1198
Rush County—		
Knightstown Natural Gas Co., W. R. Rhodes 1	*	907
Shelby County—		
J. H. Snider, Borden 1	*	1027
Vanderburg County—		
Sun Oil Co., E. & A. Bosse 1	*	2348
Vanderburg Oil Corp., Hanley 1	*	1300

*Failures; †Junked; ¶Million cu. ft. gas.

western Indiana. The show increased leasing activity about Grayville, in White County, Illinois, across the Wabash river from the wildcat.

In adjoining Warrick County to the southeast, Lowell T. Phillips, Trustee's T. S. Phillips 1, Section 32-42-6w, Pigeon township, 10 miles northwest of Booneville, was drilling at 1086 feet with cable tools after completing a fishing job.

Parhall-Graham Oil Company's M. J. Simpson 1, Section 34-1n-10w, Johnson Township, Knox County, recovered lost tools and resumed drilling below 2800 feet, with less than 200 feet remaining before the Devonian. The wildcat was being closely watched late last week.

Other Indiana wildcats and deep tests reported: In Posey County, Sun Oil Company's W. W. Gray 3, Section 20-82-14w, Point Township, shut down at 2715 feet. The same company's W. A. Brown 1, Section 8-9n-7w, Lewis Township, was drilling below 700 feet.

In Orange County, R. S. Hayes' Baker 1, Section 29-3n-2w, Northwest Township, the only St. Peter test underway in southern Indiana, was setting casing at 560 feet. The wildcat expected to encounter the Devonian at about 1300 feet, the Trenton at 2300 feet and the St. Peter, corresponding to the Wilcox sand in Oklahoma, at about 3100 feet.

In Spencer County, Frank Damron et al's A. W. Haines 1, Section 34-7n-6w, appeared to be successfully finishing a fishing job at 1475 feet and was expected to resume drilling to the McClosky late last week. Being drilled with a cable tool rig, it was believed within a few feet of the lime. In this county, C. D. Neff et al were cutting road and moving in material for Ollie Deeg 1, near Eureka. Otto Davis, contractor, was moving in a string of rotary tools from the Centralia pool of Illinois.

In Knox County, Mid-West Development Corporation's P. F. Jackson 1, Section 54-3n-9w, ran 6⅝-inch to 2848 feet and was making new hole below 2908 feet on the way to the Devonian. This company's L. A. Wirth, Section 15-2s-9w, Columbia Township, Gibson County, spudded and was drilling at 300 feet at last report, while its George W. Keifner 1, Section 2-2n-5w, Barr Township, Daviess County, was started last week and is drilling at 211 feet.

In Jefferson County, Yinglin & Hayes' Raynolds 1, near Woodlawn, Jefferson County, was drilling at 1880 feet. Lemoine & Taylor's (Sycamore Oil Company) Collins 1, Section 16-7s-8w, Anderson Township, was drilling at 1890 feet and as yet had not encountered the McClosky.

The Vanderburgh County commissioners have ordered bids received on oil leases at the Poor Infirmary, following a request of several oil companies for leases.

Refinery to be built at Zanesville, Ohio

Members of the Ohio-Pennsylvania Grade Oil Producers Association have organized Zane Refining Company for construction of a 1500-barrel plant at Zanesville, Ohio, for processing Buckeye crude. The refinery, to cost an estimated $500,000, will be built on a 40-acre site along the Muskingum River, according to Philip N. Faine, association secretary. Decision to build the plant was brought by several cuts in the price of crude during the present year.

Oklahoma Fields

Three recent Wilcox discoveries have extensions in doubt.

Offset to Payne County discovery well is failure in Wilcox.

Tulsa.—Expansion for three Wilcox sand discoveries of Oklahoma was in question at the close of last week. A dry hole for the north offset to the Coyle discovery well, Payne County, left that area in doubt with one well still drilling as a south offset. Two offsets to the discovery well at Meridian, Logan County, left question marks with answers still to be given. South of the well the yield so far has been gas. The southeast offset is shut down with salt water in the hole. In Oklahoma County a west offset to the discovery well southeast of Britton is being plugged back and tested further.

In each instance discovery wells are still producing. The three have been looked upon as offering only small pools.

Continued slowing down of field work was indicated by the completion list of 30 wells in the week against 29 wells started. The completion list included 20 producing wells, three gas wells, six dry holes and one abandoned location.

Payne County Abandonment

First disappointment in offset drilling around recent Wilcox sand discoveries came with abandonment by Summitt Drilling Company of Johnson 1, C W½ SW SW 1-17n-1e, Payne County, which went to 4962 feet in the Wilcox zone. A core between 4956 and the total depth showed water. Then an electrical logging test was made and indicated water from the Hunton lime to the bottom of the hole. The well was a north offset to the discovery well, drilled by The Texas Company, Longan 1, C W½ NW NW, for initial output of 450 barrels from first Wilcox sand plugged back depth 4960 feet. The well drilled into saturation last May but was not completed until October. Meanwhile the area had been put on a 20-acre spacing program. One other well is drilling.

So far two offsets to the discovery well of the Medidian pool, Logan County, have failed to gain production. Strain 1, NW NW SE 27-16n-1e, south offset to the discovery well, drilled the plug to 5227 feet and had gas estimated at 10,000,000 cubic feet and no oil. The southwest offset, Humphreys 1, NE NE SW 21-16n-1e, is shut down at 4314 feet with salt water in the hole. Discovery well of this field was completed in May by Sinclair Prairie Oil Company, Crews 1, SW SW NE 27-16n-1e, for 1080 barrels from Second Wilcox sand after plugging back to 5432 feet. It is still flowing.

The west offset to the one producing well southeast of Britton, Oklahoma County, was still testing with no showing for oil. It is being drilled by Olson Oil Company, Seaburger 1, SW SE NE 4-12n-4w. It had water at 6778 feet and plugged back to 6700 feet for further testing. The discovery well, Vanek 1, SE SW NE 4-12n-4w, was completed in October for 300 barrels from Second Wilcox sand, total depth 6776 feet.

Another wildcat test for Garfield County was assured last week when Champlin Refining Company made location for Allen 1, SEc 24-4n-8w, four miles southeast of the recent discovery at Hillsdale in the same county. Pure Oil Company, The Texas Company, Sinclair Prairie Oil Company and Amerada Petroleum Corporation are holders of acreage near the test. It will be carried to the Wilcox sand.

Farther west a wildcat was assured

OKLAHOMA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Creek—		
Adams & Midco Oil Co., Leverett 1, nec nw 7-16n-10e (pb 2381 ft)..	35	2386
Jackson, Wood 8, se nw se 27-18n-8e	15	2639
Sand Springs Home, Clemmons 1, nw sw nw 19-19n-8e	¶4	2540
Hughes—		
Olson Drl. Co., Estep 1A, nw sw se sw 11-8n-9e (pb 3431 ft)	¶7	3477
Jackson—		
Ray et al, Thelma 1, ne se ne 6-1s-19w	75	2569
Kay—		
Hamilton, Riddle 1, nwc 3-26n-4e..	*	3356
McIntosh—		
Cook, McIntosh 1, sw se se 4-12n-17e	*	2142
Noble—		
Hollenback, Mathews 1, c sw nw 9-20n-1e	*	5238
Okfuskee—		
Shell, Johnston 5, sw sw ne ne 11-11n-8e	151	3371
McMann, Simmer 1, sec nw 32-12n-10e	*	3537
Oklahoma—		
Clark & Co., Denwoodie 1, nw se nw se 23-12n-3w	409	6649
Osage—		
Tidewater Associated, 5, sw nw sw sw 21-24n-9e	5	2273
Barnsdall 5, ne sw ne sw 23-24n-10e	60	1729
Payne—		
Mid-Continent, Gray 2, nw se sw 18-18n-2e	6900	4793
Pontotoc—		
Carter, Craddock 2, sec ne 25-2n-6e (pb 2729 ft)	25	4305
Manahan & Oil Roy., Clark 1, 120 ft s of swc se 26-5n-7e	*	2360
Pottawatomie—		
Magnolia Petroleum Co., Tull Fyke "C" 3, sec 20-7n-5e	150	2856
Alma Oil Co., Youtz 1, se sw sw 28-7n-5e	180	4100
Gulf, Johnson 2, sw se nw 29-7n-5e	316	4117
Deep Rock, Tolen 6, sw se sw 30-7n-5e	79	4200
Alma Oil Co., Smith 4, se sw ne 32-7n-5e	535	4039
Trigg & Alma Oil Co., Rhodd 2, se nw se 32-7n-5e	285	4125
Trigg et al, Canfield 3, sw nw sw 33-7n-5e	200	4100
Seminole—		
Hall-Troup & Moore, Bruner 1, nw sw se 27-6n-5e	120	2749
Hall, Troup & Moore, Damron 1, nwc sw 3-6n-6e	111	2827
Atlantic & Texas Co., Howell 1, ne sw nw 22-6n-6e	*	3510
Wood Oil Co., Cameron 1, se sw ne 2-8n-6e	180	4159
Stephens—		
Carl Carter, McCasland 1, nw sw sw 3-2s-5w	¶3.5	866
Tulsa—		
Kewanee Oil Co., Stewart 12, c se nw 4-16n-13e	18	2078

*Failures; †Junked; ¶Million cu. ft. gas.

for Kingfisher County, Leonard 1, NE NE SE 34-17n-6w. Ace Gutowsky will drill to the Wilcox sand.

One of the Cleveland County wildcats was abandoned last week by Big Chief Drilling Company, Straetger 1, NW NW SW 25-9n-2w, after a second twist off. It was drilled to 7175 feet where it had the first twist off. After plugging back the hole was at 6510 when the second mishap occurred. Gulf Oil Corporation is plugging back and testing Taylor 1, SE SE SW 1-7n-2w, Cleveland County, a mile north of the single Wilcox sand producer in the Noble field. It was drilled to 7676 feet. A plug back with 25 sacks of cement resulted in salt water showing on that test.

Second Test at Salina

A second test has been started for the Salina area, Seminole County, where Viola lime production was established last week. Lewis and LeFever will drill King 1, NE SW 4-5n-6e, two locations south of the discovery well, Collins 1, NE SE NW 4-5n-6e, which flowed 400 barrels in 3 hours and 20 minutes from Viola lime, total depth 3270 feet, top 3203 feet. This well, an offset to a Hunton lime producer, has been shut in for tankage and pipe line connections.

Most active spot in the Seminole area is now the West Little River field, a discovery of the year, where six wells are now drilling and four producing.

Another producer was added to the Fox-Milroy deep production of Carter County by Gulf Oil Corporation, whose Franklin 1, C NW SE 27-2s-3w, was completed at 7652 feet, where it flowed 580 barrels from Oolitic lime through tubing. The depth is 400 feet shallower than other producers in this lime.

The first sand encountered in the Carter County wildcat of Pure Oil Company, Noble 1, NE SE 35-2s-3w, came between 3348 and 3350 feet, where a core was taken. From the surface to this level all cuttings were shale.

An extension for the old Grayson pool, Seminole County, was in prospect by Superior Oil Corporation, whose Swan 1, NW SE SE 12-6n-5e, is swabbing oil from the Simpson dolomite. It will be put on the pump. The dolomite was found at 3270 feet and drilled to 3294 feet. After acid treatment it swabbed 640 barrels in 14 hours.

Osage sale

Pawhuska.—Buyers took 60 tracts of Osage County Indian lands, 11,077 acres, total bonus $15,900, at the fiftieth auction of tribal leases here December 6. The auction saw 79 tracts offered, total acreage 12,517.

Highest price paid was $2,700. Most of the tracts went for $100.

Jackson, Miss.—One of Sun Oil Company's torsion balance units working in the Gulf Coast area is now engaged in the northeast part of Pearl River County. The California Company has a gravimeter unit working in Amite County, near Centreville. Union Producing Company has a seismograph unit working between Jackson and Meridian, now engaged in Scott County near Forest.

Kansas Field Developments

Showings indicate opening of 3 more pools in west end. Harvey County wildcat makes 254 barrels on test.

Wichita.—Showings to indicate addition of three more pools for Western Kansas were part of the result of field work in Kansas last week. Two of these are in Barton County, one in McPherson County. In addition there was an extension of a half mile south for the Beaver North pool, also in Barton County. This county also drew completion of a well, which may link the Silica and South Silica pools.

End of the week found the three wells, which look like pool openers, still to be tested.

Success of drilling came despite a low level of field work. Completions for the week ran to 33, 24 being oil producers. Stakes were driven for only 28 new wells.

Latest well to begin showing for a new pool is that of Marylyn Oil Company's Dixon 1, NE NW 7-19-2w, McPherson County. It entered Mississippi chat at 2986 feet and drilled to 2995 feet, where tools were removed to set casing. Oil rose 400 feet in 2 hours. The test is a mile and a half northeast of the Chindberg pool with dry holes between it and production.

Two in Barton County

Barton County held prospects for two new fields at the close of the week. Showing for each was sufficient to justify the prediction of commercial production.

A. G. Kaiser and associates found saturation in the Arbuckle lime in Hagen 1, SWc 20-20-11w. The well is two miles south of the Ellinwood pool. Top of the lime was found at 3321 feet and drilled to 3330 feet. After plug was drilled oil rose 2800 feet in the hole. First testing method was by swabbing and at the end of the week the well was making as much as 50 barrels an hour.

Sinclair Prairie Oil Company had the other showing in Prusa 1, SEc 20-16-11w, three miles northwest of the Kraft pool. Here the hole was standing full of oil while tanks were being erected for a test. It was drilled to 3235 feet in the lime.

A wildcat completion for the week followed a showing of the previous week in Harvey County, where Carey Drilling Company and Derby Oil Company, Jones 1, NEc 7-22-1w, made potential of 254 barrels from the Misener sand, top 3279 feet, total depth 3289 feet.

A small well in the old production area of Butler County was completed by Stuart and Gross, Semish 1, NW SE SW 34-27-7e, in Mississippi lime, 2788 to 2800 feet. It made 15 barrels of oil with 30 barrels of water on the pump. This well is considered an extension to the old Keighley pool.

An extension of a half mile south for the Beaver North pool was indicated when Palmer Oil Corporation's Miller 1, NW SW SW 3-16-11w, had saturation in 2 feet of the Arbuckle lime found at 3318 feet. Casing was set in order to complete and test.

Last week brought completion of the well which has been considered as a link between the Silica and South Silica pools, Barton County. It is Peters B-1, NWc 13-20-11w, completed by Indian Territory Illuminating Oil Company for 200 barrels at 3209 feet in the Arbuckle lime.

Rooks County came into the picture with a small show in the wildcat of Phillips Petroleum Company, Tanzey 1, C NW SW 25-8-18w, which pumped 2½ barrels an hour from Arbuckle lime between 3415 and 3420 feet. It was deepened 1 foot and pumped 4 barrels an hour for only a short time.

KANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Shell, Ehrlich "A" 4, sec nw 18-16s-13w (pb 3160 ft)	2506	3347
Stettinger 6, se sw se 1-16s-14w	15	3343
Lario & I. T. I. O., Lena Zahorsky "A" 3, 100 ft east of sw nw ne 23-20s-11w	1512	3282
Butler—		
Stewart & Gross, Ruth Semisch 1, 100 ft east of nw se sw 34-27s-7e	15	2800
Rex-Morris et al, Brewer 1, nwc ne 23-28s-7e	*	3323
Cowley—		
Phelps & Spencer, Asnusson 1, sec nw 29-30s-5e	*	2993
Ellsworth—		
Continental et al, Rolfs 1, sw nec 28-17s-8w	1662	3250
Ash, Wilkens 1, sec nw 13-17s-10w	381	3282
Transwestern et al, Cain-Stumps 2, nwc sw 33-17s-10w	2098	3271
Greenwood—		
Katz Oil Co., Life 3, ne nw ne 13-26s-9e	*	2146
Dunlap, Warren Mortgage Co. 1, ne nw nw sw 4-28s-10e	*	2224
Whittaker, Anderson 1, nw se se 5-28s-11e	*	550
McPherson—		
Western Kansas O&R Co., et al, Union 1, nw ne sw 18-17s-1w	419	2689
Rice—		
Phillips, Bolton 2, nw swc ne 31-18s-7w	1534	3188
Continental, Williams 4, sw ne nw 13-18s-8w	2487	3228
Shell, Zajic 12, se sw ne 13-18s-8w	2630	3227
Texon Drilling Co., Johnson 1, swc se 10-20s-9w	678	3328
Tatlock, Drews 8, sw ne sw 5-20s-10w	1063	3326
Russell—		
Jones-Shelbourne, Kuhnle "A" 1, nw ne sw 4-15s-12w	393	3288
Western Kansas O&R Co., Keil 1, ne nw nw 6-15s-13w	822	2909
Coralena Oil Co., Seigfried 1, nwc 16-15s-13w	1635	3126
Shell, Dumler 3, nw se sw 36-15s-14w	313	3333
Sedgwick—		
Fuller, Lennery 1, nec nw 21-25s-1e	406	2997
Stafford—		
Crosbie, Inc., Johnson 6, ne nw sw 13-24s-11w	1028	3822
E. H. Moore, Inc., Ira Johnson 8, sec sw 13-24s-11w	1574	3812
Pure, Krey 12, se nw se 14-24s-11w	4022	3809
Stanolind et al, Volker "A" 5, ewl nw se ne 23-24s-11w	910	3803
Sumner—		
Wentworth, Latta 2, sec ne 8-30s-2w	83	3092
Woodson—		
Harper, Figge 2, ewl ne nw se 28-23s-14e	50	1678
Bunch Bros., Boyd 1, nw ne se 29-25s-14e	*	440
Monarch Royalty Co., Central Life 1, cel lot 5, nw¼ 29-26s-14e	*	1514

*Failures; †Junked; ¶Million cu. ft. gas.

West Texas Fields

Garza County well is flowing from lower Pennsylvanian. Strike expected to open new era of development in area.

Midland, Texas.—A new era in West Texas oil development is forecast by the discovery of flowing oil production from the lower Pennsylvanian overlying a deep bedded granite ridge on the eastern platform of the Permian basin. The strike was made by Gulf Oil Corporation's E. P. Swenson et al 1-B, northeastern Garza County, and within a fairly solid spread of leases aggregating 150,000 acres that are controlled by the company. Production is from 10 gun-perforated holes in casing at 7327-34 feet after plugging back from igneous rock at 8104 feet, and is conservatively estimated at 200 barrels daily without tapping more favorable oil saturation cased off at a higher level.

The Swenson pool discovery is about 20 miles from nominal Permian lime production in the Post and Justiceburg pools, Garza County, and the nearest Pennsylvanian production lies across a county to the east and in Stonewall County, which has one well, and four pools in northern Fisher County.

The northeastern Garza County strike, located at C NW H&GN Section 25, Block 2, plugged back from 8104 feet to 7400 feet, where 7⅝-inch pipe was cemented. A casing leak necessitated a re-cement job, and the hole was plugged back to 7352 feet before perforating the pipe. The preliminary production test by swabbing through casing yielded 20 percent oil and 80 percent wash water before the well apparently cleaned itself flowing by heads. Initial gauge in tanks amounted to 259 barrels of clean oil, testing 36.7 gravity, in 32 hours, including 111 barrels in 1½ hours. The well quit flowing, and bailing operations revealed the presence of brackish water. The fluid level could not be lowered below 2000 feet from the surface by bailing. The installation of tubing with packers reduced the volume of water, with the well yielding 220 barrels of oil and 35 barrels of water by swabbing during the third 24-hour period. Last mid-week the well swabbed 150 barrels of oil, plus 13 percent water, in 14 hours, and the production was mudded off to recement the bottom of the hole. This operation will likely necessitate new casing perforations. The oil is credited with being immune from sulphur content. The gas volume has been rated at 350,000 feet daily.

Gulf Oil Corporation originally invaded the northeastern Garza County area in 1927 when its E. P. Swenson 1-A, NW NW NW H&GN Section 67, Block 2, checked high structurally for the region in exploring the Permian to 5105 feet, resulting in water at 3665-3735 feet and sulphur water was topped at 4835 feet, with an elevation of 2492 feet. The company's Street 1-D, C H&GN Section 7, Block 8, passed up shows at the 3300-foot level, with water at 3535 feet. The latter was abandoned at 4115 feet in September, 1929, with an elevation of 2505 feet. This exploratory work was preceded by the drilling of Deep Rock Oil Company's Swenson 1, C H&GN Section 36, Block 2, which was abandoned at 3502 feet, October, 1926, having topped the lime at 1630 feet, with an elevation of 2351 feet. This shallow failure is the nearest to the producer.

Supported by geological analysis of the area over a period of years and more recent geophysical data, Gulf Oil Corporation contracted last year to drill an 8500-foot Ordovician test, or to granite, in acquiring lease on alternate quarter sections out of 30,000 acres of the large Swenson ranch. The company later acquired from the ranch owners two additional blocks, each embracing the checkerboard lease feature, and situated to the southeast in Kent County, and to the northwest in Crosby County. It is understood that Gulf Oil Corporation holds prior right to purchase the alternate quarter sections if they are offered for sale, thus giving the company control over 90,000 acres. In recent weeks the Gulf Oil Corporation has bolstered its lease position along a southeast trend from the well now in process of completion by acquiring 10-year term commercial leases on an aggregate of 51,000 acres in large tracts in western and south central Kent County for an average cash bonus of $1.45 per acre, with 50 cents annual rental.

The most promising oil saturated zones encountered in the Pennsylvanian are in the upper section, according to reports, and the zone yielding the first production was not rated as prospective by the official log and electrical survey.

Although details are lacking, it is understood that Swenson 1-B found a large section of the Ordovician missing, and that water was carried by that penetrated. The nearest Ordovician tests involve failures in Fisher and Glasscock Counties.

Pure Oil Company is the owner of

WEST CENTRAL TEXAS Completions

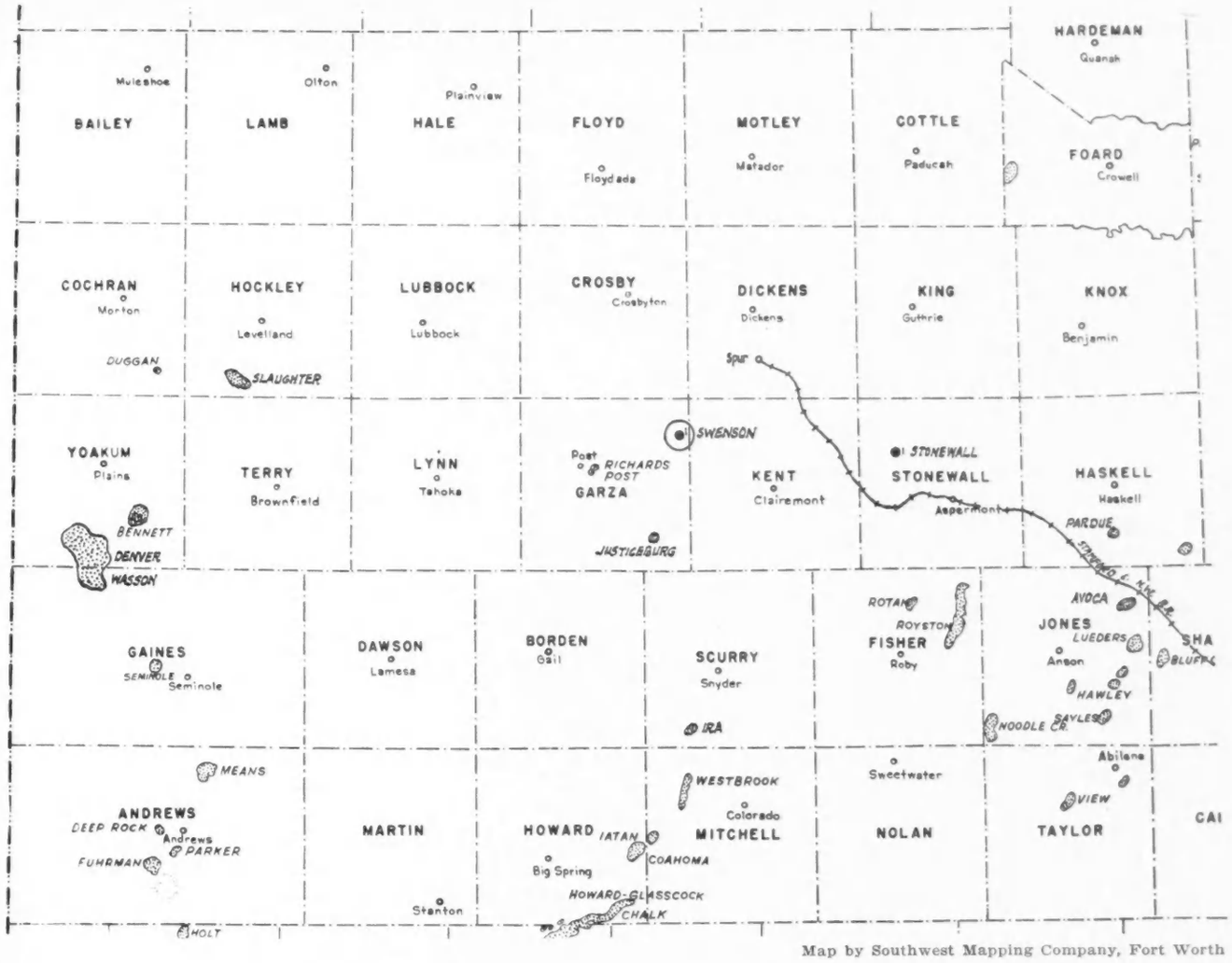
Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Brown & Gardner, Tabor 2	*	2457
Cox & Slusher, Guthrie 1	5	910
Evans et al, Kilgore 1	10	1170
Mitcham et al, Newton 2	15	1259
Philips et al, Seawalt 1	¶1.3	931
Callahan County—		
Forest Dev. Corp., Johnson 1	*	593
Johnson et al, Higgins 2	*	443
Higgins 3	*	470
H. W. McGee et al, McDermott 1	*	590
Warren & Kleiner, S. E. Clark 1	12	748
Coleman County—		
Anzac Oil Corp. et al, Morris 2-J	*	3375
Megahan et al, Klutts 1	*	514
Murray et al, Dibrell 1	*	2865
Simpson & White, Baker 1	¶4.4	2302
Comanche County—		
DeArman et al, Underwood 1	35	2764
McCarter et al, Landreth 1	*	855
Robinson 1	12	640
Smith 1	4	639
West 1	*	765
Eastland County—		
Baker et al, Mulloy 3	*	3087
McCulloch County—		
Noble & Johnson, Patton 1	¶3½	1566
Palo Pinto County—		
Albaugh & Crow Drl. Co., Holt 1	*	4230
Goble & Moore Drl. Co., Costello 1	*	2550
Gordon et al, Ringo 1, sec 85	*	3606
Palo Pinto Oil Corp., Strawn Coal Co. 22	*	3381
Parker County—		
Hollenback et al, S. L. McNay 1	*	990
Shackelford County—		
Beaumont et al, Harbough 2	5	410
Butler et al, Nail 3	55	1403
Fortson & Polk, Beck 1	80	3232
Hart et al, Sanders 1	*	606
Jones et al, Dodson 9	*	640
Dodson 10	3	655
Lee & Key, Diller 9	7	522
Lee 2	¶2½	1050
Moutray-King Drl. Co. & Wrightsman, Newell 1	*	1475
Sedwick et al, McCloud 1	*	1190
Skaggs et al, Mobley 1	*	592
West & Honea, Hill 1	*	950
Stephens County—		
T. P. Coal & Oil Co., Coody 2	27	1930

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Means)—		
Shell, J. S. Means 2	1189	4515
Ector County (Foster)—		
Broderick & Calvert, Witcher 10	1103	4305
Continental, Johnson 5	753	4280
Stanolind, E. F. Cowden 10-A	1037	4170
Ector County (Goldsmith)—		
Gulf, Goldsmith 138	824	4212
Goldsmith 139	2808	4250
Goldsmith 140	960	4210
Goldsmith 141	1032	4203
Ector County (Harper)—		
John Mabee et al, P. Moss 3	2689	4200
Gaines County (Wasson)—		
Amon Carter et al, Wasson 2-C	1530	4980
Hockley County (Slaughter)—		
Murchison & Closuit, Inc., Slaughter 1	656	5056
The Texas Co., Mallett L&C Co. 1-B	179	5035
Howard County—		
Magnolia, A. E. O'Daniel 10	515	2800
A. E. O'Daniel 11	367	2795
Moore Bros. Corp., O'Daniel 3-B	147	2825
Shell, T. P. Land Trust 4-A	299	2835
Irion County (Wildcat)—		
Perry Fox et al, J. M. Nutt 1	*	1580
Jones County—		
Condor Pet. Co., H. Sayles 19	779	1970
Gwynn & Overby, G. M. Gillespie 1 (w)	*	2500
W. J. Healey & Walters, Daughtry 5	550	1914
Iron Mt. Oil Co.-Humble, Jones-Stasney-Bowden 8	2118	3217
C. Olander 5	600	3231
W. A. Stiles et al, M. Cook 1	*	4315
Ungren & Frazier, Steffens 2	280	1898
Pecos County (Masterson)—		
Childress Roy. Co., Shearer 1	395	1483
Pecos County (Pecos Valley)—		
Superior Oil Corp., Iowa Realty 6	98	1656
Pecos County (Shearer)—		
W. H. Street et al, Shearer-Texas Co. 4	196	1455
Pecos County (Taylor-Link)—		
H. G. Eastham et al, University-California 1	677	1598
Pecos County (Wildcat)—		
H. H. Sides et al, Blackstone-Slaughter 1-a	*	2160
Reeves County (Wildcat)—		
A. R. Eppenauer et al, fee 1	*	2000
Sterling County (Wildcat)—		
J. W. Sward et al, T. G. Brennard 1	*	3011
Upton County (McCamey)—		
Hancock & Knox, Baker-Republic 2	*	2375
Shell, Baker 5	945	2211
Rogers 4	211	2328
Ward County—		
J. E. Fitz-Patrick, Pickrell et al, Dyer 1 (w)	*	5144
Ja-Chel Oil Co., J. W. Sullivan 1	231	2078
H. M. Jaffe et al, V. Myers 1 (w)	*	2538
V. Myers 1-B (w)	*	245
Western Well Service Corp., Johnson 1-C	148	2056
Winkler County (Emperor)—		
Texon O&L Co.-Group No. 1 Oil Corp., Cowden-Conoco 3	633	2956
Winkler County (Kermit)—		
Magnolia, Walton 198	249	3212
Walton 199	1656	2881
Walton 201	1909	2935
Yoakum County (Bennett)—		
F. M. Allison Prod. Co., Bennett 2	2231	5237
J. L. Crump-Black Bros., Bennett 4-B	2239	5240
John Mabee et al, Willard 1-D	2840	5227
Magnolia, Bennett 5	740	5254

*Failures; †Junked; ¶Million cu. ft. gas.



Map by Southwest Mapping Company, Fort Worth

The eastern platform of the Permian Basin section of West Texas was experiencing an active lease and royalty play the past week due to the development of flowing production from the lower Pennsylvanian. The wildcat strike was made in northeastern Garza County by Gulf Oil Corporation's Swenson 1-B, indicated by circle, and opens a new trend of development for the district, with the play extending along a northwest-to-southeast course.

the nearest acreage to Gulf Oil Corporation's Swenson holdings, having about 12,000 acres on the west, north and east flanks, including several sections that reach within 1½ miles of the discovery.

Humble Oil & Refining Company strengthened its lease position early this year in the upper region of the eastern platform of the basin by acquiring leases on 466,500 acres from the Matador Land and Cattle Company Ltd. in Dickens, Crosby, Cottle, Motley and Floyd Counties. This deal carried a 6000-foot depth contract, and the company is drilling Matador 1, 6 miles northeast of Dickens.

Reduced proration allowables assigned the Bennett and Wasson fields, most active areas in the north portion of the Permian basin, effective December 1 has been followed by an improvement in the pipe line situation. Humble Pipe Line Company, only pipe line outlet for the district, has resumed taking new connections since the cut lowered runs to within the capacity of the 6-inch carrier to Hobbs.

Two-stage acid treatment given John Mabee et al's Willard 1-D, one-mile southwest outpost for the Bennett field, boosted the rated potential to 2840 barrels, with a gas/oil ration of 600 feet per barrel, from pay at 5040-5227 feet. The broken pay was acidized with 1500 gallons and 4500 gallons of acid, resulting in a flow of 760 barrels the first 6 hours and 710 barrels the next 6-hour period. The rotary rig has been skidded 880 feet south to drill Willard 2-D in compliance with the continuous development clause in the lease contract. Devonian Oil Company has staked a northeast diagonal offset to the outpost producer. Shell Petroleum Corporation's Ruyts 1, located 1¼ miles southeast of the Bennett field, swabbed 165 barrels of fluid, averaging 50 percent bs&w, in 20 hours after using 1500 gallons of acid in broken pay at 5080-5266 feet. This well was drilled in with water mid-November, and has not recovered the drilling fluid absorbed by the lime.

The completion of a dry gasser from the Yates sand that was passed up in exploring the Permian to the 4856-foot level was in store for The Texas Company's University 1-H, NW NE SE Section 4, Block 14, located south of Shafter Lake, Andrews County. This wildcat plugged back to 4083 feet, and gun perforated pipe at 2920-50 feet, resulting in 950 pounds pressure on the bradenhead and 550 pounds on the casing. Test of the gas flow was in progress late last week. Anderson-Prichard Oil Corporation and Osage Drilling Company's University-Humble 1, midway between the above gasser and the Deep Rock oil field, logged top of anhydrite at 1670 feet, and was drilling at 1700 feet.

L. H. Wentz et al's Cowden 1-L, southern Andrews County wildcat and on a strike between the Emma and North Cowden areas, failed to make a commercial oil producer after plugging back from water at 4428-36 feet for nitro shot at 4390-4428 feet, and has been plugged. Rogers & Rogers' University 1-B, C SW¼ Section 20, Block 9, has derrick up for a test, with several adjacent lease owners contributing acreage and cash.

Reeves County's lone oil producer drilled by Lagoki Oil Company and H. F. Anthony on the Richards & Shaw tract, near C N½ NW PSL Section 16, Block 59, flowed 30 barrels of 27.5 gravity oil in 36 hours after running tubing. Production is from Castile at 1625-30 feet. Ohio Oil Company's Popham 1, T&P Section 18, Block 54, Tsp. 10, southern Reeves County wildcat, is reported to have picked up oil show in lower Delaware at 5700-10 feet. It is scheduled to deepen. Top of the Delaware lime was called at 4938 feet, and first sand at 5030 feet, with an elevation of 3623 feet. It is on a 16,700 acre block.

Jones wildcat swabs 35 barrels in 7 hours

Abilene, Texas.—Preliminary production test given Luther Hedrick et al's D. Akard 1, south central Jones County wildcat, yielded 35 barrels of high gravity oil on 7-hour swabbing test through tubing from the Bluff Creek sand at 2149-54 feet. Pipe was cemented at 2141 feet. Top of the pay was called at 2149 feet, with gas showing in hard sand topped at 2146 feet. This wildcat is near the center of the south line of the G. Martinez Survey No. 137, and is 5¾ miles southwest of the Hawley field, nearest production.

The completion of a second producer in the recently discovered Palo Pinto lime pool near the townsite of Avoca was assured when Iron Mountain Oil Company and Humble Oil & Refining Company's Taylor 1, near SWc NW¼ Section 199, cored oil saturation in sandy-lime at 3222-24 feet. It is a north offset to Ungren-Frazier et al's Griffin 1, which flowed 543 barrels oil in 14 hours natural from pay at 3253 feet.

Horwitz and Oldom's E. S. Maury 1, located in semi-wildcat sector of northwestern Stephens County, flowed an average of 29 barrels of oil hourly natural from saturated lime at 3530-42 feet. Top of the lime was called at 3518 feet. This well is near a recent completion owned by the partnership.

Twenty-acre spacing ordered for Wasson

Twenty-acre spacing for wells in the Wasson field, Gaines and Yoakum counties, is provided in an order issued by the Texas Railroad Commission. However, wells are to be drilled 330 feet from property lines and at least 770 feet apart. The peculiar method of spacing was thought necessary because the field is divided into diamond-shaped tracts.

Under this plan of operation it will be possible for producers to drill a second well on a 20-acre unit should this method of operation prove profitable or should commission regulations change in the future.

Rules call for 150 feet of surface casing cemented to the surface and an oil string cemented 600 feet above the shoe.

The commission order provides that in determining allowables, "Each proration unit and each fractional proration unit shall be entitled to produce daily that proportion of fifty percent (50%) of the remaining amount of oil permitted to be produced daily in the field, that the acreage of each proration unit or each fractional proration unit bears to the sum of the acreage of all producing proration units and fractional proration units in the field; and in addition thereto, shall be entitled to produce daily that proportion of fifty percent (50%) of the remaining amount of oil permitted to be produced daily in the field, that the daily average potential production of each proration unit or fractional proration unit bears to the sum of the daily average potential production of all proration units and fractional proration units in the field. The daily average potential production of each proration unit shall be the daily potential production of the unit divided by the number of wells producing oil therefrom. The daily average potential production of a fractional unit shall be its potential well production divided by the number of wells thereon. It is further provided that at the election of operator the well density may be kept to one well to forty (40) acres as shown on a plat submitted to the commission indicating his development program, then in that event allowables shall be allocated on the following basis of fifty percent (50%) for the potential as is allocated to wells on the twenty (20) acre unit, and in addition thereto an acreage allowable equal to twice the acreage allowable allocated to a twenty (20) acre unit. It is further provided, that in case of a tract or lease which is developed to a well density between twenty (20) acres and forty (40) acres, such tract shall, as to its acreage allowable, be allocated its proportionate part of the oil within the field which is allocated on the acreage basis by multiplying the acreage allowable of a twenty (20) acre unit by a fraction the numerator of which is the well density of the tract and the denominator is twenty (20)."

The use of this plan permits the drilling of a second well on the 20-acre unit, but prevents the full allowance for the second well. A maximum gas/oil ratio of 5000/1 was ordered.

North Texas

Northeastern Archer County wildcat showing in Strawn

Wichita Falls, Texas.—Northeastern Archer County wildcat drilled by Louis Sikes, Prince Bros., et al on the Ford tract, T. Cecil Survey, was showing for an oil producer in the lower Strawn series. It is 3½ miles northeast of wells producing from the same zone in the Hull and Silk field, and is 1½ miles northwest of the McCrory pool's 4760-foot pumper. Originally abandoned last June at 4204 feet. Ford 1 was deepened to 4430 feet and filled 750 feet with oil and 150 feet with drilling fluid in 13 minutes, with tester packer at 4397 feet. Formation tester used at 4370-89 feet yielded 240 feet of oil. Broken sand at 4347-55 feet is credited with having carried show of oil with water. Liner is scheduled to be set inside 7-inch pipe, which was cemented at 4170 feet, to try for a completion in the lower pay.

J. L. Swanner et al's Parker 1, south central Wichita County semi-wildcat, indicated a 2-mile east extension for the K-M-A deep field, in flowing by heads after nitro shot at 4024 feet. It is rated at 100 barrels daily, and was plugged back from 4054 feet.

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull & Silk)—		
Texas Co., Wilson 34-A, sec 29.....	127	4428
Archer County (Jackson-Canyon)—		
Martin & Son, Stehlik 1, sec 6....	58	2624
Shappell Oil Co., Jackson 50, sec 23	600	2621
Archer County—		
Cochran & Cain, Herron 1, sec 12 (w)	*	891
Hutchison et al, F. Jehlik 1, blk 132	*	1390
Rathke Oil Co., Cullum-Jones 1, sec 2 (w)	*	729
Young et al, A. J. DeMoss 1.....	*	1030
Clay County—		
Bowers et al, Shumake 6, blk 4..	250	1158
Martin & Son, Shumake 1, blk 2..	*	1406
Payne et al, Henderson 1.....	*	1308
Cooke County—		
Kingery Bros., Felderhoff 5.....	*	1368
Haskell County—		
Roeser-Pendleton-I.T.I.O., Daugherty 1, sec 19	*	4700
Jack County—		
Gilmore et al, Martin 3, sec 3328..	*	382
Hanlon-Buchanan, Jackson 1.....	*	1510
Ed Myers 1-A	*	400
Nelson Oil Synd., Henderson 5...	200	2812
J. B. Sneed & Co., Bloodworth 6..	1	340
Wichita County (Jackson-Canyon)—		
Shappell Oil Co., Jackson 51, sec 23	456	2630
Wichita County (K-M-A)—		
Humble, Taylor 32, blk 81.....	552	3901
King Oil Co.-Perkins-Cullum, Pettit-State 3	550	3914
Mitchell & Buzzard, Mitchell 1, blk 4	675	3849
Pet. Producers Co., Waggoner Bros. 2, sec 35	674	3931
Staley et al, Mangold 8, blk 32....	688	3855
Sunray Oil Co., Burnside 2.....	600	3933
Young County—		
Imperial Pet. Co., McCluskey 1, sec 1110	*	2645
Regal Oil Co., Koester 1.....	*	1101
Reischman-Camp & Kelly, Davidson 1	396	3743
Selboldt Drl. Co., Wolf 1, sec 623..	12	3960

*Failures; †Junked; ¶Million cu. ft. gas.

High gas allowance asked for Seminole

High gas allowances for wells in the Seminole Field, Gaines County, were requested at a hearing last week before the Texas Railroad Commission. Adams and Bradley advocated the change which was approved by Shell Petroleum and Magnolia Petroleum. The plan was opposed by Ohio Oil and Amerada Petroleum who operate wells in the field.

Perry Adams, owner of the discovery well, asked for the increase. He wanted an allowance of 5000/1 for his No. 1 S. J. Averitt. The field has been operated under a statewide rule which fixed the maximum ratio at 2000/1.

Adams told the Commission that his well was high on the structure and that although it has been drilled deeper, water was encountered and it had been found necessary to plug back. He expressed the opinion that the high ratio had resulted from the location of the well high on the structure rather than from an improper method of completion. The well has 4908 feet of 5½ inch casing and is producing from about 5029 feet. Free gas was found at 4885 feet and continued at intervals down to 5015 feet. Elevation on the well is 3318 feet, Adams said.

Ohio Oil Company protested against the increase, and Jim Wheeler, petroleum engineer for the company, said that he had encountered a similar condition in an offset well where a ratio as high as 50,000/1 had been encountered. He told the Commission that the Ohio well was deepened to 5116 feet and that the water found was not bottom water and soon disappeared when upper gas was plugged off, and the ratio then dropped to an average of 1407/1. He urged that the Commission not revise its rule until remedial tests he had suggested were made.

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Hall County—		
English Oil & Prod. Co., J. M. Eudy 1	*	4016
Hutchinson County—		
Magnolia, SW Oil & Dev. Co. 9....	10	3157
Phillips, Haile 8	306	3091
Stansylvania Oil Co., Stansbury 7..	457	3060
Stekoll Oil Co., Whittenburg 6-C..	50	3029
Wheeler County—		
Cub Oil Co., Major 2.....	*	2330

*Failures; †Junked; ¶Million cu. ft. gas.

East Texas Fields

Plan nine tests after Joaquin well gets oil

Shreveport, La.—Pundt and associates (Redditt and Gray), who recently completed Pickering Lumber Company 1, W. M. Snider Survey, Shelby County, Texas, near Joaquin, as that district's first Glen Rose well to make oil, plan a nine-well program in that area in 1939, it was reported last week.

These operators' Pickering Lumber Company 1, located 1000 feet southwest of the nearest of three Glen Rose gas-distillate producers, gauged 86 barrels of 42.4-gravity oil through various-sized chokes with 7,000,000 feet of gas daily, with casing and tubing pressure equalized at 2300 pounds. Later, the well made 135 barrels of oil in 24 hours. The production at first was mixed with distillate and showed a gravity of 55. The well was completed after perforating with 20 shots at 5053-60 feet. Total depth is 5084 feet.

Arkansas Fuel Oil Company's Moseley 1, A. Johnson Survey, in the southwest offshoot of the Jefferson district, Marion County, was coring ahead below 6018 feet, after testing 20,000,000 feet of gas daily in the Henderson horizon topped at 5981 feet with test made from 5870-93 feet. Gloyd horizon was logged at 6008 feet.

Tom Bell and A. J. Vestal were testing Moseley 1, D. Lane Survey, a shallow wildcat in Marion County, that several months ago logged oil showings in the Tokio. Total depth is 2574 feet.

Ten-acre spacing for Flag Lake field

Ten acre spacing for wells in the Flag Lake Field, Anderson County, was provided in an order issued by the Texas Railroad Commission last week. Provision is made for 100 feet of surface casing cemented to the surface and an oil string cemented at least 1,000 feet above the shoe.

Maximum gas/oil ratio of 2,000/1 has been provided and proration is based on acreage and per well with 50 percent allocated on each factor.

165 East Texas wells have been depleted

Kilgore, Texas.—The depletion and plugging of oil wells in the East Texas field has resulted in the elimination of 165 wells from production lists during the first 11 months of this year, according to compilation by the Railroad Commission. A total of 100 former producers were plugged in 1937.

Will try directional hole on Navarro Crossing test

Palestine, Texas.—Directional drilling is to be attempted by Humble Oil & Refining Company in the Navarro Crossing oil and gas field, Northwestern Houston County, in an effort to reach oil or gas production in the Woodbine near the 5800-foot level after its Dailey & Taylor 2, J. G. Thompson survey, missed the pay zone. This well proved to be lower on structure than anticipated, and found water in sand at 5867-77 feet. The hole has been plugged back to 3740 feet to drill out at an angle of 10 degrees northeast. Open hole prevails below the 9⅝-inch casing seat at 2203 feet.

East Texas A.P.I. holds largest meeting

The largest meeting ever held by the East Texas Chapter of the American Petroleum Institute was staged December 6, when 657 gathered in the Kilgore High School auditorium. The regular dinner preceding the meeting also established an attendance record, when 173 attended.

The reworking of wells to shut-off salt water was the topic of the evening. C. P. Parsons, vice president of Halliburton Oil Well Cementing Company, delivered a paper on "Squeezing Cement Against Permeable Formations." Phil Montgomery, engineer with Halliburton, discussed the different types of

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Georgian Oil Corp., Cole 2-C (20-ac)	1200	3841
O. Goldsmith and W. C. Powell, E. E. Moore 2 (49.95-ac)	400	3778
Humble, Holt 8 (41¼-ac)	6800	3788
Kangerga 73-A (333¼-ac)	7000	3669
Luling O&G Co., Frederick 3 (7.93-ac)	240	3610
McCutchin et al, B. Attaway 6 (25-ac)	3600	3790
Ohio, Clay 26 (113.56-ac)	700	3646
L. B. Rollins 5 (66-ac)	4000	3653
M. L. Thompson 13 (98.15-ac)	6500	3628
Kilgore Area—		
Adams & Lyles, Howard 15 (47.7-ac)	8500	3644
Continental, King 6 (35.8-ac)	750	3675
Delta Oil Co., Barber Est. 3 (5-ac)	5000	3517
Lansberry, Rec., A. Money 28 (320-ac)	2500	3595
A. Money 29 (320-ac)	2600	3687
Lewis Prod.-Selby O&G Co., Pegues 10 (40-ac)	7300	3690
Pegues 11 (40-ac)	6500	3660
Phillips, I&GN 5	1200	3600
Longview Area—		
Atlantic, Christian 7 (31-ac)	9000	3669
H. Pritchard 21 (100-ac)	9300	3640
Bumpas et al, Snoddy 4 (6.56-ac)	7200	3578
Gulf, Bozeman 20 (110.68-ac)	8000	3598
Humble, Adams 10 (93-ac)	3600	3485
Smith 8 (51.4-ac)	2400	3643
Shell, Akin 22 (100-ac)	8400	3615
Burnside 28 (160-ac)	8300	3611
Burnside 29 (160-ac)	8300	3603
Fishburn 21 (100-ac)	9000	3602
Sinclair Prairie, Moncrief 62 (307.7-ac)	9000	3660
Moncrief 63 (307.7-ac)	9200	3659
Stanolind, Doby 14-A (19.77-ac)	7100	3519
Anderson County (Long Lake)—		
Palestine O&G Corp., G. Robinson, Jr. 2 (40-ac)	400	5349
Tide Water Associated-Seaboard, Monnig 8	150	5258
Franklin County (Talco)—		
Byrd-Frost, Inc., Phillips-Gulf 19 (400-ac)	127	4290
Humble, Penn-Humble 5 (700-ac)	460	4285
Freestone County (Cayuga)—		
J. L. Collins & Co., Harwell 1-A (20-ac)	100	4016
Van Zandt County—		
W. S. King et al, E. Watson 1 (w)	*	2600
Marion (Jefferson-Rodessa)—		
Union Prod. Co., Hutchinson 10, A. D. S. Coy sur	175	6030
Shelby (Joaquin)—		
Pundt et al, Pickering Lbr. Co., W. M. Snider sur	135	5084

*Failures; †Junked; ¶Million cu. ft. gas.

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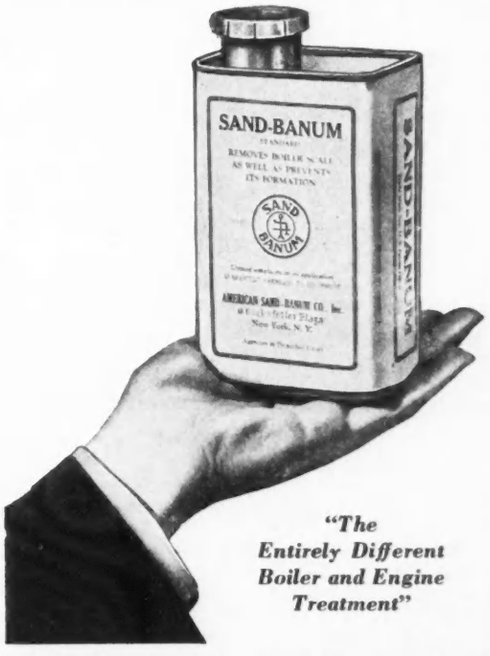

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cement plugging work being performed in the field.

The discussion that followed was highly interesting and constructive, which further demonstrated the interest in the subject, which occupied the floor for over 2 hours.

Byron Meredith, Sinclair Prairie Oil Company, and retiring chairman of the chapter, announced that the previous largest meeting held in Kilgore had 387 present. Carl Young, secretary of the American Petroleum Institute's Division of Production, Hugh Maples of the same division, and Walter Meier, chairman of district chapter activities, were present.

New officers were elected at the gathering. A detailed story of the selections appear on the personal pages this week.

Humble answers charge of selective buying

Humble Oil & Refining Company has issued a reply to the Texas Railroad Commission's charge of "selective buying" and given an explanation for its effort to get Barnsdall Oil Company to sell its West Texas and Flour Bluff production elsewhere.

In a lengthy letter from Humble's president, H. C. Wiess, it was asserted that although it had been seeking for some time to reduce takings, it had continued to make connections to the wells of independent producers in West Texas and East Texas.

"These extensions, connections and purchases were not made because we needed the oil," the letter stated, "but because we were willing to share our markets in a reasonable way and to contribute toward the solution of the problem of supplying markets for non-integrated producers.

"In order to avoid pipe line proration and to avoid cutting our purchases from small independent non-integrated producers, we wrote Barnsdall, Atlantic, Texas, Sinclair-Prairie, Sun, and Continental companies, requesting that they make early arrangements to relieve us of the excess crude.

"The Barnsdall is a large integrated company with production and pipe lines and with refineries at several places. We feel that it is the responsibility of Barnsdall to take care of its own production . . .

"All the others apparently accepted the responsibility for their own production."

Southwest Texas Fields

Nueces County test below 13,000 feet, in heaving shale. Sun pool in Starr County has production from Vicksburg.

Corpus Christi. — Texas' first 13,000-foot test was drilling in Nueces County last week as Union Producing Company's Minnie Brown 1 rapidly neared the level of the second deepest well in the world. It is expected to go to close to 14,000 feet, it is not as deep as the Continental Oil Company's 15,000-foot California operation, which set a world record. The test still was in heaving shale at 13,150 feet, having drilled more than 4200 feet of the formation.

The operation is of importance due to the fact that it is on a major uplift upon which several fields in the Agua Dulce area is producing. It has progressed deeper into the geological column than any well along the lower Gulf Coast, thus determining sand values of these deeper beds.

Another deep operation is Hiawatha Oil & Gas Company's Roemer 1, near Seadrift in Calhoun County, which is contracted to 13,000 feet. The well was drilling below 10,000 feet late in the week.

Wynne Crosby Drilling Company's John Broughton 1, 6300 feet northeast of the Francitas field, Jackson County, and discovery well of a new Frio oil sand, flowed 65½ barrels of oil per day through ⅛-inch choke under 2250 pounds tubing and 2800 pounds casing pressure. Gas/oil ratio was 16,000 cubic feet to one barrel. The oil is 42 gravity, while the production from the discovery well is distillate. Perforations were made at 7393-97 feet, the sand section being logged at 7289-98 feet and 7401-10 feet.

About 4,000 feet southwest of the La Rosa field, Refugio County, Hewitt & Dougherty's Rooke 1, flowed 155 barrels per day through 5/32-inch choke under pressures of 850 pounds on tubing and 1650 pounds on casing. It logged the lower sand at 5888-92 feet and 5896-5903 feet.

About 3½ miles northeast of the field, Rutherford Oil Company's Nieman 1 was coring for the 6300-foot pay. It tested oily mud and salt water with 5 pounds pressure at 5355-67 feet, salt water at 5932-50 feet. It is looked upon as having a good chance of producing at the lower level.

Aransas Pass townsite had 11 more permits issued, bringing the total to 33. This townsite is in the edge of the McCampbell field of San Patricio and Aransas Counties and is expected to be productive in part. The permits have been granted by the city commission, but not by the railroad commission.

Sun-Kelsey district well producing from Vicksburg

Mission.—First Vicksburg sand production in the Sun-Kelsey district was by the completion of Circle Oil Company's Sabas Olivares 1, a ¾-mile north extension to the Sun pool of Starr County. The test cored sand at 5115½-35 feet, drilled to 5150 feet and set casing on bottom. Pipe was perforated at 5117-19 feet and the well flowed 55 barrels of 47.9-gravity crude per day through ⅛-inch choke under pressures of 2000 pounds on tubing and 1325 pounds on casing.

This discovery definitely establishes this structure as a Vicksburg producer. Several tests drilled in the area have been carried into the Vicksburg formation and showed oil and gas, but they were completed in shallower sands in the Frio.

To the north in the Kelsey field, Jim Hogg County, an extension of 3732 feet to production was proved by the second well. After being carried to 5274 feet, Humble Oil & Refining Company'sA. K. Bass 3, was plugged back, perforations made at 4728-35 feet. The well flowed 135 barrels of oil per day through 3/16-inch choke and showed a trace of salt water.

Sun Oil Company has three rigs running in the Sun pool, while the Humble Oil & Refining Company is running two in the Kelsey area. They are on outpost locations, the results of the tests having an important bearing on the future of the field.

Trending south, Transwestern Oil Company has a failure in Dallas Joint Stock Land Bank 1, Survey 226, and 3 miles northeast of Rincon field. The well is waiting on orders at 5025 feet, having failed to find sands in the Vicksburg zone.

Phillips Petroleum Company opened distillate production deep in the Vicksburg in the Samfordyce field, Hidalgo County, with Rafael Flores 1, about ¼ mile north of present production. The test found a sand series between 5840-5900 feet while drilling to 9708 feet. The hole was plugged back to 5950 feet, 5½-inch liner set on the new bottom and completion effected through perforations at 5840-5900 feet. It flowed 50 barrels of white distillate with 2,260,000 cubic feet of gas through 3/16-inch choke. Working pressure was 2800

SALE OF OIL AND GAS LEASE—United States Department of the Interior, General Land Office, Washington, D. C. Notice is hereby given that the NE¼ NE¼ Sec. 13, and the NW¼ NE¼ Sec. 25, T. 21 N., R. 10 W., La. M., 80 acres in the Cotton Valley oil and gas field, Webster Parish, Louisiana, is offered to the responsible qualified bidder of the highest bonus per acre under section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in circular 1386, at the sale to be held in the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 10:00 o'clock A. M., on January 5, 1939. The successful bidder must deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the amount of each bid and file the showing of qualifications to receive a lease, required by section seven of General Land Office circular 1386. The remaining four-fifths, together with the annual rental in advance at the rate of $1.00 per acre, must be paid prior to the issuance of a lease. The bidders are warned against violation of the provisions of section 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior.

FRED W. JOHNSON, Commissioner.

pounds and bottom-hole pressure 4200 pounds.

R. E. Harding et al's E. M. Card 1, at the east city limits of McAllen, Hidalgo County, continues its tests. Perforations were reported to have been made around 5900 feet where the well is making a production test.

City commissioners of McAllen passed a strict city drilling ordinance, one which will prevent a townlot offsetting campaign. The whole townsite is mapped as being upon the McAllen field structure, hence the ruling was deemed necessary to prevent damage from possible blow-outs from the numerous high-pressure distillate sands already proved.

The ordinance provides that no well may be drilled upon a block of less than 50 acres within the city limits; a $5,000 drilling permit fee must be paid to the city for such a well, and a $250,000 safety bond must be posted for such drilling within the city. Small landowners opposed the ordinance on the grounds that it would make operations of less than major firms impossible. The city's reaction was that federal housing loans on residential construction have been halted until such protective measures were passed by the commission. Phillips Petroleum Company controls in excess of 15,000 acres in the district and likely will be the major developer of this reserve.

Bee County test going deeper after slight show

Beeville.—After showing a little gas and no fluid in the upper Cockfield sand, Chapman Minerals Corporation's Ablinger 1, on the Beeville prospect in Bee County, was coring below 5973 feet. It first tested a little oil at 5941-73 feet, but could not get a consistent flow. Perforations then were made 5858-72 feet and the well showed some dry gas under 675 pounds pressure.

Steinberger Petroleum Corporation has completed William F. Albrecht 1, 6000 feet southwest of the discovery well of Weser field, Goliad County. The test opened the first Cook Mountain production along the Pettus trend when it headed 65 barrels of crude per day through perforations 5234-43 feet. The well had been drilled to 5315 feet.

Mirando district production gets important extensions

Laredo.—Two key field extensions or entirely new producing areas were established in the Mirando district during the past week. One of the most important developments in the Sweden sector of Duval County has resulted in another producing area in the Government Wells sand zone. In the meantime, Killam-Oilton district in Webb County was adding considerable new territory with a 2000-foot producer.

Longhorn Drilling Company's M. M. Miller 1, NE Section 28, about 1¾ miles southwest of the Sweden Field, flowed 203 barrels of 45 gravity crude in 24 hours through 5/32 inch choke with pressures of 780 pounds on tubing and 1000 pounds on casing. It cored the Gravis (Government Wells) sand at 4893-99 feet, elevation 374 feet derrick floor, and set casing at 4892 feet. The test is on a 160-acre farm-out from the Hiawatha Oil & Gas Company and M. M. Miller. This test is classified as defining a new field, rather than as an extension to the present Sweden area. It is about one mile south of a test drilled by the Hiawatha Oil & Gas Company, which made a small producer in the same sand section.

This discovery is looked upon with considerable interest as the geophysical picture indicates a structure of large proportions. In addition, geological work outlined a possibly important field.

SOUTH TEXAS Completions

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County—		
Southern Cross' Riddle 1 (Riddle)	*	1739
Teas, Ashley, Hinton, Grizzard 1, wc, 9 mi s Smithville	*	7177
Caldwell County—		
Lincoln, Mebane 1, wc, 3 mi sw Lockhart	*	1984
Ogden, Dinges 1 (North Dale)	20	2571
Stivers, Calliham 1, wc, John Roe sur	*	2373
Guadalupe County—		
Diamond-Half, Anderson 2 (Darst Creek)	52	2611
Gulf, Tadlock 7 (Darst Creek)	200	2623
Hamill & Hamill, Tewes 1, wc, 4¾ mi s New Berlin	*	622
Williams, Weber 1, wc, 2½ mi se Marion	*	1483
Medina County—		
G. G. G., Saathoff 1, wc, 3½ mi sw D'Hanis	*	1303
Williamson County—		
Smith, Rydell 1, wc, 7 mi sw Taylor	*	659

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Brooks County—		
Lanning & Coffield, Mestina 1, wc, 4000 ft, sw N. Alta Mesa field	*	2808
Calhoun County—		
Humble & Plymouth, Vandenberge 4 (Heyser) (perf 5585-88 ft)	¶10	6234
Hidalgo County—		
Phillips, Flores 1, wc, abt ¼ mi n Samfordyce field (perf 5840-5900 ft)	¶2½ & 50	9708
Jackson County—		
Crosby, Broughton 1, wc, 6300 ft ne Francitas field	350	7414
Nueces County—		
Andrade, Dunn 6 (Turkey Creek)	*	4107
Morgan 3-B (Saxet)	*	4900
Conservative, Flinn 6 (S. Clara Driscoll)	500	5550
E. & H. Morgan 1 (Turkey Creek)	260	3866
Houston, Koemel 1 (S. Clara Driscoll)	350	5445
Humble, State 1-C (Flour Bluff)	750	6674
Morgan, Fee 2-D (Saxet)	¶10	6310
Ohio, Shaffer 7 (Luby)	500	5215
Renwar, McKinzie 21 (Turkey Creek)	450	5824
Southern Minerals, King 14 (Bentonville-King)	425	4020
Sultex, Taggert 3-A (Saxet)	*	6875
Refugio County—		
Copano, O'Connor 42-B (Tomoconnor)	1350	5871
Geophysical, Michna 1 (La Rosa)	500	6357
Hewit & Dougherty, Rooke 1 (La Rosa)	600	5903
Quintana, Williams 3 (Tomoconnor)	600	5969
San Patricio County—		
Grote & Corgey, Tedford 3 (2) (McCampbell)	1250	7128
Pantex, State 5 (Plymouth)	525	5616
Plymouth, Cole 2-A (E. White Point)	600	5645
Victoria County—		
Humble & Plymouth, Vandenberge 7 (Heyser)	725	5487

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bee County—		
Bunn & Texas, Sparkman 2, wc, 1 mi e Mineral	*	4105
Duval County—		
Amerada, Fitzsimmons 2 (Fitzsimmons)	320	4335
Fitzsimmons 3 (Fitzsimmons)	600	4350
Cox & Hamon & Gorman-Yoakam, Casas 2 (Hoffman)	*	2877
Feltner, Welder 1 (Eagle Hill)	*	2752
Longhorn (Miller), Miller 1, wc, 1¾ mi sw Sweden field	600	4899
Magnolia, Duval 11, sec 201 (Eagle Hill)	35	1521
Duval 13, sec 291 (Casa Blanca)	50	1185
Massingill, Duval 1, sec 59 (Lundell)	77	1486
Porter, Fitzsimmons 8-A (Fitzsimmons)	500	4336
Porter & Wheelock & Collins, Fitzsimmons 5 (Fitzsimmons)	700	4420
Rowan & Hope & Hagan-Stewart, Cuellar 1-B (Hoffman)	100	2719
Stewart-Nye & McKenzie, Peters 2-A (Rancho Solo)	127	1882
Goliad County—		
Steinberger, Albrecht 1, wc, 13 mi n Goliad, 6000 ft sw discovery of Weser area	65	5313
Jim Hogg County—		
Humble, Bass 3, wc 3732 ft n discovery of Kelsey field (perf 4728-35 ft)	250	5274
Live Oak County—		
Southwest, Hill 1-A (Ezzell)	*	1710
Stancil, House 2 (Ezzell)	20	1491
McMullen County—		
Graham, Nueces 11 (Munson)	125	1221
Jones, Ezzell 48 (Ezzell)	182	1595
Starr County—		
Circle, Olivares 1, wc, ¾ mi n Sun field	150	5150
DeWitt, Alvarez 1, wc 7 mi w Rio Grande City	*	987

*Failures; †Junked; ¶Million cu. ft. gas.

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Texas Gulf Coast

Mount Houston discovery still having trouble completing. Second well in League City area in process of completion.

Houston.—Jack Frazier is having trouble in completing Griffith 1 on the Mt. Houston prospect, A. Smith Survey, Harris County, because of measurements in the hole. The hole was measured by two sources and these did not check but it is definitely known that there is approximately 15 feet of sand in the hole. It was drilled to 8350 feet and the oil sand believed at 4075 feet was found by an electrical log. Hole was plugged back, 5½-inch casing set at 4100 feet and perforated from 4073½ to 4077½ feet with 24 holes. The well came in flowing one barrel per hour, 25 percent oil and 75 percent washwater. Later it started making salt water and was killed. Casing again was perforated from 4070 to 4077½ feet with 36 holes and a one-hour drill stem test was dry. Indicating that the cement probably had gone back into the oil sands when the perforations at 4073½ feet were squeezed. However, it did show a slight blow of gas. The hole was acidized to break up the cement. December 9 drill stem test of the same perforations at 4077½ feet recovered 15 stands of mud, 50 percent oil-cut mud and 50 percent mud, no salt water and enough gas to light a flare. It is the plan now to wash the well and see if it will not come in and if that fails to perforate higher to take in more gas sand. While drilling to 8350 feet the well attempted to blow out and heavy drilling mud was pumped into the hole and it is expected that the hole will have to be washed for some time before it is cleaned.

Humble Oil & Refining Company's Masterson 1, Anchor area, Geo. Robinson Survey, Brazoria County, last week cored 10 feet of broken formation including 4 feet of sand with an odor and good cut of oil and gas. This core was from 8560 to 8570 feet. At the end of the week the hole was drilling at 8860 feet in shale.

North of Orange in Orange County, Sun Oil Company's Lutcher-Moore 1, B. Johnston Survey, cored a gas sand around 8915 feet last week and was forced to pump in heavy drilling mud. The hole is being carried deeper and is coring at 8945 feet for oil sand.

Second at League City

A half mile west of the discovery well at League City, Galveston County, Geo. H. Echol's M. Stewart 1, Perry & Austin Survey, is flowing fluid, 40 percent mud, 40 percent washwater and 20 percent oil from Frio sands which were perforated from 9059 to 9092 feet with 71 shots. When this well is finally completed it will make the second producer for the field. Hole was drilled to 9119 feet in salt water sand, topped at 9117 feet. Seven-inch casing was set on bottom.

Midstates Oil Company's M. Stewart 1, 950 feet east of the discovery well, was coring in shale below 9233 feet last week and is below the regular producing horizon. It cored sand showing 11 percent saturation from 9105 to 9123 feet. Salt water sands were cored from 9123 to 9128 feet, 9128 to 9188 feet and from 9188 to 9214 feet.

Phillips Petroleum Company has made location for Stewart 1, 467 feet from the south line and 467 feet from the east line of a 17.82 acre tract in S. F. Austin Survey, Abstract 3.

On the east side of Dickinson field, Galveston County, Midstates Oil Company completed M. Holmes 1, W. K. Wilson Survey after casing was perforated from 8680 to 9700 feet. The well flowed 207 barrels in 14 hours.

In the Green's Lake area, Galveston County, Sun Oil Company has abandoned Houston Farms Development Company 1 at 6980 feet after showing salt water at 6968 feet.

On the south flank of South Houston, Harris County, Smith & McDannald's F. Molk 1, J. Gay Survey, was abandoned at 7976 feet in heaving shale. Salt water sands were cored in the Frio formation.

On the west side of Fairbanks field, Harris County, Amerada Petroleum Corporation and Stanolind Oil & Gas Company's Peters 2, W. K. Hamblin Survey, was being completed after perforating casing with 12 shots from 6964 to 6968 feet. The well was making oil, gas and wash water. It flowed 113 barrels in 13 hours through a ¼-inch choke.

About 3000 feet southwest of production at Eureka, Harris County, Tide Water Associated Oil Company's Roy 1, J. Rinerman Survey, was coring in broken formation at 7680 feet last week after coring 20 feet from 7609 to 7629 feet and recovering sand and shale with a show of gas.

Carroll Oil Company abandoned Norma Means 1, T. J. Green Survey, at Pearland last week. It was drilled to 7007 feet and cored salt water sands in Frio formation.

Northeast of Cotton Lake field, Chambers County, Don Moore et al made location for E. Maley 1, 990 feet south from Cotton Bayou and 417 feet west of the west bank of Cotton Lake in Ben Winfree Survey.

About 6000 feet south of production at Turtle Bay, Chambers County, Stanolind Oil & Gas Company are taking side-wall cores in State 1-38 after drilling to 8530 feet in shale. This is the deepest hole drilled at Turtle Bay and salt water sands were found in the producing horizon. If the side wall cores failed to show oil sands the hole will be abandoned.

In Gulf of Mexico off shore of Jefferson County, Humble Oil & Refining Company's McFaddin State B-13 was drilling in shale at 4450 feet at the end of the week after logging salt water sands around 4180 feet.

North of production at Hastings, Brazoria County, H. F. Alexander is preparing to make another test on Stiener-Blumer 2, H&TB Section 28, after showing salt water from 6171 to 6178 feet. The perforations have been squeezed with cement.

At Wilson's Creek in Matagorda County, United North & South Development Company completed Stoddard 1-A in the 10,000-foot horizon. The old total depth of the well was 9978 feet and it was drilled below 10,000 feet and was perforated from 9990 to 10,058 feet. The well came in flowing 160 barrels of 56-gravity oil daily. Tubing pressure was 1950 pounds and the casing was sealed.

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Humble, Middleton 37	583	7080
Dickinson—		
F. W. Bennett, Levin 5	¶2	8126
Midstates, Holmes 1	360	8700
Fairbanks—		
Amerada-Stanolind, Ley 1	120	6850
Munger 1	120	6843
Nobel & Baker, Hillegeist 2	652	6852
Williams & Gillispie, Deacon 2	402	6982
Friendswood—		
Humble, Beamer 24	615	6046
Herman Hospital 8	603	6048
Green's Lake—		
Sun, Houston Farms Dev. Co. 1	*	6980
Hardin—		
Fohs, Thompkins 1	428	7620
Humble, Partlow A-7	530	7625
Texas Co., Smith 1	505	7667
Tide Water, Cessna 4	389	7658
Hastings—		
Stanolind, Froberg 6	505	6080
Hull—		
Houston Prod. Co., Hannah Fee 7	419	5120
Keown Oil Corp., Piveto 9	119	1761
Humble—		
B. N. D. Oil Co., Landslide 2	*	1150
J. A. Deering, Lee 4	211	4611
Grace Oil Co., Texas Co. 14	13	987
North Cheek—		
Magnolia, Phelan 5 (wo)	119	8406
Pickett Ridge—		
Gilcrease Oil Co., Duson 2	124	4680
Kubbla 1	*	4827
South Houston—		
Smith & McDannald, Molk (South flank)	*	7976
Thompsons—		
Humble, Lockwood Sharp A-X-39	*	3732
H. M. Naylor, Booth 4	105	5405
Tomball—		
Humble, Milo 8	192	5561
Quilter B-14	¶1½	5568
West Columbia—		
Smith Salvage Co., Masterson 2	282	1796
Wilson Creek—		
United North & South Dev. Co., Stoddard 1-A (wo)	160	10,058
Withers—		
Texas Co., Pierce Estate B-24	129	5549
Brazoria County—		
Carroll Oil Co., N. Means 1, Pearland area, T. J. Green sur	*	7007
Montgomery County—		
Deep South Pet. Co., Foster Lbr. Co. 1, ne of New Caney, P. Bryan sur	*	6985

*Failures; †Junked; ¶Million cu. ft. gas.

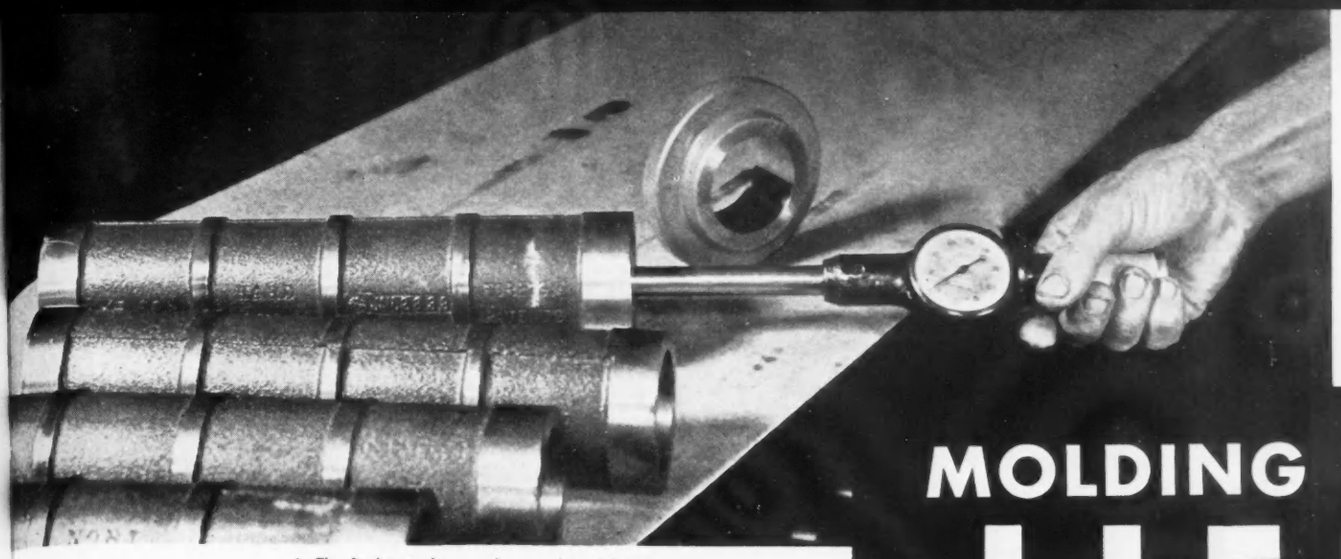
Recycling approved for Old Ocean field

Recycling of gas produced in the Old Ocean Field, Brazoria County, is provided for in an order issued by the Texas Railroad Commission last week. The order recites that it is based on a hearing held in Austin on November 30, which was the hearing on condensate wells.

Thus the Old Ocean order becomes the first Commission ruling resulting from this hearing, concerning which an extended article written by the Commission's chemist, F. V. L. Patten, is included in the current issue of The Oil Weekly.

The gas is to be returned to the Frio formation, and suitable equipment to effect such a program is to be installed immediately, the order provides.

RICHARD E. LUSK, 51, for 20 years district gauger in North Louisiana for Gulf Refining Company, died at his home in Shreveport December 7 after an extended illness. He was a native of Binghampton, New York.



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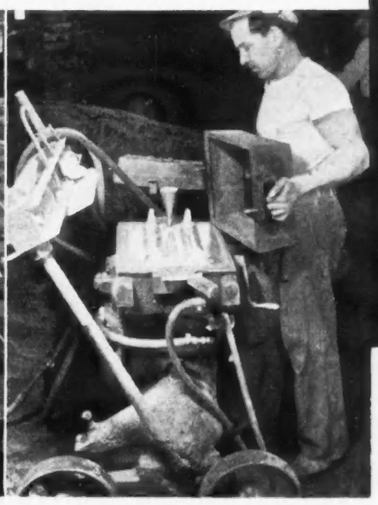

3. Liner molds being made with aluminum patterns.

4. Pouring temperature-controlled metal into liner molds through strainers with skimmer attendants.

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South Louisiana

New fields opened in St. Martin and Lafourche Parishes.

Moving in rig for pumping test on Henderson oil showing.

Lake Charles.—Two new oil fields were discovered in South Louisiana last week when Shell Petroleum Corporation and The Texas Company brought in wells at West Lake Verret and Golden Meadows. Other outstanding developments in the district included indications of a new oil field at Henderson, St. Martin Parish, and discovery of a new producing horizon at Tepetate, Acadia Parish.

Golden Meadows prospect, Lafourche Parish, was converted into an oil field when The Texas Company completed LaTerre Land Company 1, Section 1-20s-21e, at 8500 to 8520 feet. The well flowed 628 barrels of 37.4-gravity oil through a ¼-inch choke. Tubing pressure was 2350 pounds with casing sealed. Hole was drilled to 11,135 feet. The first indication that this wildcat would open a new field was when a test at 10,000 feet showed distillate. The hole was plugged back and several other tests were made, which showed salt water, before final completion at 8500 feet. The company has two other tests active at Golden Meadows.

Shell Petroleum Corporation's Murdin 1, Section 15-14s-12e, West Lake Verret, St. Martin Parish, came in flowing oil and salt water. Casing was perforated from 8017 to 8020 feet and flowed 17 barrels of fluid per hour, 39 percent oil and the balance salt water, through 14/64-inch choke with a tubing pressure of 500 pounds and the casing pressure was 650 pounds. The oil tested 39.4 gravity. At the end of the week the well was flowing 523 barrels of fluid daily through various size chokes. Of the 523 barrels, 190 barrels was oil and 333 barrels water. Tubing pressure was 725 pounds and casing pressure 1405 pounds. The company has started Jeanerette Lumber Company 2, Section 14-14s-12e.

The Texas Company's St. Martin Land Company 11, Section 21-8s-7e, at Henderson, St. Martin Parish, was perforated with 15 holes from 8060 to 8065 feet and a drill stem test was made in two hours with a 1000-foot water cushion, recovered two stands of muddy water with gas and 38 stands of oil. Screen and liner was set and the well was washed but it would not flow. A standard rig is being moved in to pump.

Also in St. Martin Parish, The Texas Company's State 6, Section 10-10s-9e, at Lake Mongoulois, was plugging back from 10,403 feet where salt was cored. Top of the salt was logged at 10,388 feet. Before plugging back the well had a strong salt water flow. This wildcat encountered a slight show of oil around 9290 feet.

Deeper Sand at Tepetate

Continental Oil Company opened a new and deeper producing horizon at Tepetate, Acadia Parish, by completion of Homeseekers 1-A, Section 29-7s-2w. The hole was drilled to 9447 feet and plugged back to 9220 feet. A short string of 4¾-inch casing was set onto the 7-inch at 8611 feet. The casing was perforated from 9165 to 9220 feet with 36 holes and the well came in flowing 134 barrels of 33.4-gravity oil daily through a 5/32-inch choke. Tubing pressure was 2300 pounds and casing pressure 400 pounds. The well was being tested through various size chokes at the end of the week. The field has been producing from sands at 8297 to 8323 feet and at 7777 feet.

A half mile southeast of the discovery well at North Tepetate, Atlantic Refining Company has set 7-inch casing in the second well, Klumpp 2, which drilled to 8516 feet and set casing. It is running about level with the discovery well on structure and cored a deeper sand at 8457 to 8511 feet. The initial producer was completed from 7960 to 7970 feet. Klumpp 2 cored sands with a gas show from 7943 to 7963 feet. The discovery well made gas and distillate. Casing will be perforated first in the new sand at 8457 to 8511 feet and if this is not productive the hole will be plugged back and the sand around 7943 feet will be tested.

Sun Oil Company has completed the second producer on the flank at Chacahoula, Lafourche Parish. Dibert, Stark and Brown 3, Section 70-15s-15e, southwest of the discovery well, came

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SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Baton Rouge—		
William Helis, Duplantier 3 (wo)	350	6482
Caillou Island—		
Texas Co., State Terrebonne Bay 5	503	6497
Charenton—		
Knisley Pet. Corp., LeBlanc 3	175	1804
Creole—		
Superior, State 3	387	5267
Darrow—		
Humble, Community 19	*	7796
Gillis—		
Fohs Oil Co., Irwin 1	85	7053
Jennings—		
Gulf, Arnaudet 40	485	6858
Ladak Oil Corp., Jennings Clements 7	50	1732
Lake Long—		
Fohs, State 6	208	9482
Potash—		
Western Gulf, Treadway 1	*	2952
Tepetate—		
Continental, Homeseekers 1-A (wo)	134	9220
Villa Platte—		
Continental, Tate-McDaniel 2	241	9027
Texas Co., Norman 1	100	9124
Calcasieu Parish—		
Pure, Calcasieu National Bank 3	*	8051
Jefferson—		
Carter et al, Adams 1, ne of Lafitte, 9-17s-24e	*	10212
Lafourche Parish—		
Texas Co., LaTerre Co. 1, Golden Meadows, 1-20s-21e, dr to 11,135 ft, comp	628	8520
St. Martin Parish—		
Shell, Burdin 1, West Lake Verrett, 15-14s-12e	163	8020
St. Mary Parish—		
J. P. Scranton, State 1, n of Charenton in Grand Bay	*	3000

*Failures; †Junked; ¶Million cu. ft. gas.

in flowing 13 barrels of pipe line oil per hour through a ¼-inch choke. The hole was drilled to 7275 feet and 7-inch casing was set at that depth. Oil sands were cored from 7256 to 7269 feet. The second producer had a tubing pressure of 300 pounds and a casing pressure of 600 pounds.

A quarter mile east of production at Lake Long, Lafourche Parish, Fohs Oil Company brought in State Lake Long 6, 17s-19e. It flowed 208 barrels of 39 gravity oil daily through a 10/64-inch choke with a tubing pressure of 2500 pounds and a casing pressure of 2300 pounds. Casing was perforated with 15 holes from 9356 to 9362 feet.

Republic Production Company is completing another well at Bancroft, Beauregard Parish. Columbia Land & Timber Company 3, Section 16-6s-13w, was flowing 130 barrels daily through a ⅛-inch choke. A potential test will be made over the week end. The well cored oil sand from 7278 to 7292 feet. East of the field, George E. Lilley's W. K. Rice 1, Section 15-6s-13w, was drilling below 7300 feet in shale after coring a sand with a show of oil at 7280 feet.

At Bateman Lake, The Texas Company is preparing to make another test on Wax Bayou 1 after showing gas at 10,470 feet. This St. Mary Parish well was perforated with 20 holes from 10,470 to 10,490 feet and a 7-minute drill-stem test through ¼-inch chokes built up a pressure of 1000 pounds and closed in pressure was 1400 pounds. This gas sand is new for the field. The same operator's State 2 at Horseshoe Bayou, St. Mary Parish, was drilling in shale at 12,065 feet last week and is searching for a deeper producing horizon.

The Texas Company is searching for a deeper producing horizon at New Iberia, Iberia Parish. Gounsulin 1, northeast flank of field, Section 12-12s-7e, was drilling in shale at 9197 feet at the end of the week and is the deepest well ever drilled in the area. Surface casing (13⅜-inch) was set at 1259 feet. Other deep wells in this area have run into heaving shale but Gounsulin 1 has evidently missed the heaving formation.

The Texas Company completed L. P. Bryant 5 at New Iberia in a new producing horizon. Casing was perforated from 6460 to 6482 feet with 40 holes and the well came in flowing 415 barrels of 31.5-gravity oil daily through a ¼-inch choke. Tubing pressure was 1250 pounds.

New Horizon at Caillou Island

A new producing horizon was discovered at Caillou Island, Terrebonne Parish, last week when The Texas Company completed State Terrebonne Bay 5, Section 19-23s-20e, after casing was perforated with 180 shots from 6470 to 6497 feet. Initially the well flowed 500 barrels of 42 gravity pipe line oil through a ¼-inch choke with a tubing pressure of 830 pounds. The new sand is between the 6100-foot and 6620-foot producing horizons.

Superior Oil Company has completed another well in the Creole field, one mile offshore of Cameron Parish in Gulf of Mexico. State 3 made 390 barrels of 34-gravity oil daily through a 12/64-inch choke at 5267 feet in Miocene sand topped at 5246 feet. Seven-inch casing was set at 5244 feet.

North Louisiana Fields

Plan Permian test at Cotton Valley to go below 12,000 ft. Caddo Parish wildcat quits without showing in Glen Rose.

Shreveport, La.—H. L. Hunt, the most active operator at present in the Cotton Valley field, Webster Parish, will drill a Permian lime test in that district at an early date, to go to 12,000 to 14,000 feet, it was reported last week. Location is expected to be made in Section 24-21n-10w. Cotton Valley since August, 1936, has been producing oil from the Travis Peak at 5600 to 5900 feet, and for almost two years has been producing gas and distillate from the lower Marine horizons from 8100 to 8600 feet. Recently these lower Marine sands were found productive of oil on the northwest and south flanks. Hunt has acquired a great deal of acreage in Cotton Valley, especially on the east and northeast sides.

Arkansas Fuel Oil Company's F. F. Webb 1, C NW SW 4-16n-13w, Caddo Parish wildcat at Lucas, 10 miles southeast of production in the Shreveport field, was abandoned last week at 6010 feet, contract depth, after failing to log any showings in the Pettit (basal Glen Rose lime). This test with elevation of 168 feet logged top of the Travis Peak at 5872 feet, after topping the Pettet at 5616 feet. On top of the former marker it was 78 feet higher than a recent abandonment in Section 37-17n-13w and on top of the Pettet was 3 feet lower than the latter abandonment.

Another interesting wildcat test in North Louisiana abandoned last week was Continental Oil Company's Singer Manufacturing Company 1, C 2-15n-11e, Madison Parish, which was dry at 4486 feet in Midway, which was topped at 4321 feet; elevation is 77 feet. This test was three-fourths mile southeast of the first test that picked up salt at 4194 feet. Obligated to drill three tests in the series, operators are expected to drill the third test between the two abandonments. Singer Manufacturing Company 2 topped Cockfield at 540 feet; topped Sparta at 1610 feet and topped Wilcox at 2575 feet. Electrical log was run before hole was abandoned.

Only one new location was made last week in the Shreveport field where five tests were making hole and another was rigging. One and one-fourth miles south of production, C. D. Loe and associates were cleaning out hole by bailing at Lionel Meyer 1, SW SE 33-18n-14w, preparatory to running packer for new test. The well on last

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SHREVEPORT LOUISIANA

Lake Charles—Houma—Converse
New Iberia—Monroe
Cotton Valley—Greggton
Magnolia—Houston

swabbing showed oil and water. Old total depth is 5632 feet.

Two locations north of production, R. E. Allison's Jones-Mabry 1, SE SE 21-18n-14w, was drilling shale and lime at 5243 feet after topping the Jeter horizon at 4828 feet and logging 20 feet of soft formation therein. This is the most advanced of the five drilling operations in the field. It is checking eight feet lower on markers so far, compared to the same operator's discovery well in SW NW 27-18n-14w.

Arkansas-Louisiana Gas Company's Davis Lumber Company B-1, SW NW SW 7-16n-4w, Bienville Parish, Driscoll district, that had shown salt water in several tests, was finally plugged back to 5850 feet and completed gauging 22,879,000 cubic feet of gas.

E. T. Oakes is preparing to run a welded string of 4½-inch casing inside 7-inch casing that parted, at E. C. Kilgore 2, NW SE 28-21n-5w, Claiborne Parish, 1½ miles northwest of Lisbon production. Total depth is 5317 feet and the test logged 9 feet of saturated basal Glen Rose lime. It is Lisbon's only active operation at present.

Two operations on the southwest flank of the Cotton Valley field, both on which have shown salt water, were attempting new tests. H. L. Hunt was making a new test of the "D" horizon in Sandifer 1, NE NE 4-20n-10w, after perforating casing with 20 shots at 8529-31 feet.

Oliphant Oil Company's Stewart B-2, C NW NW 4-20n-10w, was cleaning out hole after second attempt as a drill-stem test failed following drilling 5 feet more from 8692 to 8697 feet. Seven-inch casing was set at 8672 feet. Operators swabbed down to 6000 feet before deepening 5 more feet, and there was a showing of oil and brackish water. The hole was shut in 12 hours and the fluid rose 1000 feet.

Two tests in the lower Marine at Cotton Valley were setting final strings of pipe: Hunt's Davis 10, Section 13-21n-10w, and Stanolind Oil & Gas Company's Webster Investment Company 1, Section 24-21n-10w. Two wells were added at Cotton Valley last week, one in the Travis Peak and the other in the lower Marine.

NORTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bienville (Driscoll)—		
Ark. La. Gas Co., Davis Lbr. Co. B-1, 7-16n-4w	¶23	7201
Bossier (Bellevue)—		
J. B. Stovall, Arkansas Fuel 5, 15-19n-11w	12	373
Caddo (Wildcat)—		
Arkansas Fuel Oil Co., F. F. Webb 1, 4-16n-13w	*	6010
Caddo (Pine Island)—		
Bobby Manziel, Muslow 2, 6-20n-15w	65	1570
J. Ober & Sons, Fee 1, 36-21n-16w	60	2279
Madison (Wildcat)—		
Continental Oil Co., Singer Mfg. Co. 2, 2-15n-11e	*	4486
Morehouse (Monroe)—		
Union Prod. Co., State 1, 16-21n-4e	¶10	2143
State 2, 16-21n-4e	¶12	2157
Union (Monroe)—		
Interstate Nat. Gas Co., Fee 88, 31-21n-4w	¶21	2180
Southern Carbon Co., Grayling 32, 17-21n-4e	¶15	2142
United Carbon Co., Rabun 2, 32-20n-2e	¶1½	2229
Webster (Cotton Valley)—		
Hunt Oil Co., Babb 9, 14-21n-10w	576	5950
Davis 2, 24-21n-10w	550	8707

*Failures; †Junked; ¶Million cu. ft. gas.

Arkansas Fields

Two Columbia County tests showing in Permian

El Dorado, Ark.—Indications of possible oil production from the Permian lime were given in two geophysical wildcat prospects in Arkansas last week.

Five miles south of the Village field, Columbia County, Tidewater Associated Oil Company and Seaboard Oil Corporation were coring at 8254 feet in J. T. Beene 1, C SE NW 15-18s-19w, after cores in the Permian lime just above this level showed oil saturation. Operators plan to set final casing after a little more coring and running of electrical log.

In a core from 8203 to 8223 feet, all of which was soft, recovery was made of 2½ feet of porous Permian lime showing saturation. In the next core to 8231 feet, recovery was poor but 1½ feet of saturated porous lime was recovered. The test drilled from 8231 to 8242 feet and cut a core from 8243 to 8247 feet, with 3 feet, 1-inch recovery of which 1 foot, 7 inches of fine oolitic lime was porous but had no saturation or stain. The next 1½ feet was dense oolitic lime with no porosity. The core from 8247 to 8254 feet, with 4 feet recovered, showed porous oolitic lime and black shale with no showing but a strong sulphur odor. Operators then went in to cut another core. This test had previous showings at 7000 to 7008 feet and around 7200 feet. With elevation of 232 feet it topped lower Marine at 5886 feet.

The other geophysical wild at prospect having a showing in the Permian lime is Fohs Oil Company and associates' Craig 1, C SE NE 5-18s-14w, which however, showed some salt water when formation tester was run. This test with elevation of 251 feet topped Permian lime at 6849 feet, and in a core from 6848 to 6856 feet recovered 6 feet of oil saturated lime and 1 foot of dense lime. Formation tester was run with ¼-inch chokes at top and bottom and in 14-minute test, it showed 4 fourbles of oil, 3 fourbles of salt water and 48 fourbles of mud. Operators arranged to core ahead.

The Schuler field had only one completion last week, but two previously completed lower Marine horizon wells, both in Section 18-18s-17w, which had shown 8 and 22 percent salt water, respectively, were successfully re-completed after squeeze jobs.

Bottom-hole pressure during the last 60 days has declined an average of one pound daily in each of the eight Permian lime oil producers in the Buckner field, Columbia County, all of which are owned by Standard Oil Company of Louisiana. Bottom-hole pressures now range from 2750 to 3050 pounds. At present rate of decline the majority of the ultimate recovery in that horizon at Buckner will have to be lifted. Standard Oil Company is completing its ninth well in the field, J. P. M. Kean 4, Section 8-16s-22w, with total depth of 7255 feet. None of these wells has been allowed to produce more than about 200 barrels daily.

In the Village field, Standard Oil Company of Louisiana's E. D. Harris 1, SW NE 15-17s-19w, Thursday was flowing oil into pits, after it started flowing while being washed. Total depth is 7442 feet. Tubing pressure was 1650 pounds and casing pressure, 1300 pounds.

The recently found new producing horizon in the red bed series around 2900 to 3200 feet in the old Rainbow City field, Union County, is still drawing some new operations, despite the lenticularity of the formation. One new producer added last week in Section 7-17s-13w, that extended production in this horizon will keep activity up, for a time at least.

Seven new starts announced in Arkansas

El Dorado, Ark.—Seven drilling permits were issued last week by the Arkansas Board of Conservation, as follows: LaFayette County—Shell Petroleum Corporation, Warren 1, located 660 feet north and west SEc SE 13-16s-24w; Nevada County—J. E. Speer, Trustee et al, P. T. Phillips 1, located 150 feet north and west SEc SE SW 18-14s-21w; Texas Canadian Oil Corporation, Stocks 3, located 165 feet south and east NWc SE SW 9-15s-22w; Union County—Edwin M. Jones, J. C. Morgan 1, located 330 feet south and west NEc SE NW 13-18s-18w; Goodwin and Manwick, Adams 1, located 250 feet north and east SWc SW NW 7-17s-13w; Mullins, Brooks et al, M. H. Nash 1, located 330 feet south and 250 feet east NWc NE SW 7-17s-13w.

Contract let for test in Florida Everglades

Miami, Florida.—Peninsular Oil & Refining Company of which Robert B. Campbell is president, has awarded contract to Loffland Brothers of Tulsa, Oklahoma, for drilling of a test in Section 36-54s-34e, Dade County, 41 miles west of Miami, and in the Everglades. Contract has also been let for building 3 miles of road from the Tamiami Trail Highway to the location for moving in a heavy rig, which is being shipped into Miami. Spudding is expected in January.

Sun Oil Company has a seismograph unit working in Lee and Hendry counties, Florida.

ARKANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Franklin (Wildcat)—		
Southern Union Prod. Co., Whitehead 1, 8-9n-26w	*	4032
Nevada (Wildcats)—		
Texas Canadian Oil Co., Stocks 2, 9-15s-22w	75	1395
J. E. Spears, Tr., G. T. Phillips 1, 18-14-21	*	1476
Ouachita (Smackover)—		
Gulf Ref. Co., S. L. Johnson 5, 29-15-15	27	2030
Union (Rainbow City)—		
J. R. Lockhart, Raulston 4, 12-17 14 ,sec compl.)	*	3357
Smuggs & Sebersky, F. A. Jerry 1, 28-17-14 ,2nd compl.)	*	3480
Ohio Oil Co., Furlough 6, 12-17-14 (sec. compl.)	*	3306
Richardson & Murphy, Morris 1, 7-17-13	480	2950
Union (Schuler)—		
Lion O. R. Co., Cecil 1, 7-18-17	720	7700

*Failures; †Junked; ¶Million cu. ft. gas.

New Mexico Fields

Lovington, Lea County wildcat, completes as gas producer.

Milnesand, Roosevelt County, test still without showing.

Hobbs, New Mexico.—Completion gauge given Westmount Oil Company's State-Amerada 1, structurally high wildcat that is responsible for the drilling of four additional tests on short-term leases in the Lovington area, east central Lea County, rated the gas flow at 12,800,000 feet daily from the Yates zone. The official potential gauge under choke was 4,460,000 feet daily. This well was halted at 3986 feet, or approximately 1000 feet above the projected oil zone, after repeated blowouts forced the alteration of the casing program. Five-inch pipe was cemented at 3018 feet, and the hole was washed down to 3375 feet to complete with tubing at 3374 feet.

Skelly Oil Company's State 1-N, C NW NE 36-16s-36e, two miles north of the gasser, logged top of the anhydrite at 2070 feet, with an elevation of 3844 feet, and was drilling at 2430 feet. This upper marker correlates 166 feet lower than the gasser, and is 34 feet higher than a dry hole 1⅝ miles to the east by north. Barnsdall Oil Company's State-Humble 1, located 3 miles northwest of the gas well, carried extra heavy mud and failed to encounter big gas in the upper zones, but logged gas show at 4100-10 feet. It was drilling at 4650 feet, and the leading contender for the oil discovery honors. Stanolind Oil & Gas Company's State 1, north offset to the gasser, and Amerada Petroleum Corporation's State 1-L-A, west offset to the former, were drilling at 850 feet and 1800 feet respectively.

Shell Petroleum Corporation's Harwood 1, deep project for the Milnesand structure, Roosevelt County, was deepened to 4780 feet without encountering production, and will proceed to the lower Permian.

The 10,115-barrel cut in the State's allowable applied by the oil conservation commission effective December 1 resulted in a 6-barrel reduction of Lea County wells, which have a quota of 50 barrels daily. This figure equals the low level attained last June. Eddy County fields were lowered from 50 barrels to 43 barrels daily.

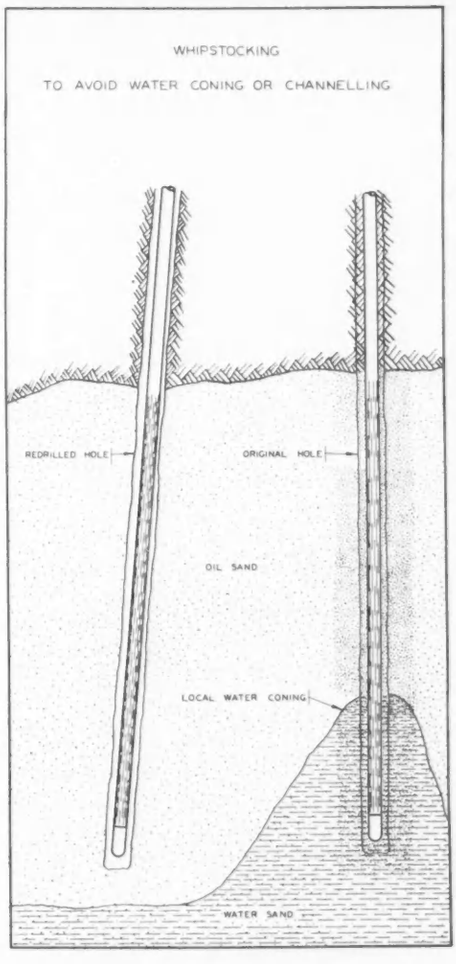
Eight new operations were credited to Lea County the past week, with the Vacuum Field contributing four of the total. Standard Oil Company of Texas' State 1, Lease 6, C NW SW 34-17s-35e, and State 4, Lease 3, C NW SE 27-17s-

NEW MEXICO
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Dominion Oil Co., Johnson 2, c se ne 35-16s-31e	120	4033
Chavez County—		
Interstate Minerals, Inc., Dunigan 1 nw nw nw 15-15s-30e (w)	*	3982
J. & L. Drl. Co., Hurd 2, c se sw 11-11s-26e (w)	*	1980
Lea County (Eunice)—		
Continental et al, Lockhart 4-B-31, c s½ se se 31-21s-36e	1680	3874
Lea County (Hardy)—		
Twin Oil Corp., Hare 1, c se sw 33-21s-37e	103	3754
Lea County (Langlie)—		
Sam Weiner et al, M. Woolworth 1, se ne sw 33-24s-37e	720	3550
Lea County (Mattix)—		
Gulf, J. R. Holt 1, c sw se 16-24s-37e	11	3548
Lea County (Lovington)—		
Westmount Oil Co., State-Amerada 1, c nw ne 12-17s-36e	¶12.8	3896
Lea County (Penrose)—		
Humble, State 4-H, c ne nw 34-22s-37e	183	3660
Skelly, King 1-B, c ne sw 33-22s-37e	195	3710
Lea County (Vacuum)—		
Helmerich-Payne-Conoco, State 1-G-36, c nw sw 36-17s-35e	60	4950
Magnolia, State-Bridges 19, c nw nw 24-17s-34e	165	4700
Shell, State 1-H, c nw sw 29-17s-35e	266	4700
Standard of Texas, State 2, lse 4, c sw se 27-17s-35e	840	4585
Texas Co., State 1-V, c nw nw 34-17s-34e	120	4790
State 1-W, c sw se 13-17s-34e	100	4680

*Failures; †Junked; ¶Million cu. ft. gas.

AVOID WATER CONING
by Sidetracking



Water coning, or channeling, is a common condition in wells with an underlying water table or water drive. Essentially this amounts to a localized rise of the water table in the immediate vicinity of the producing well.

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35e, were required by offset producers. Twin Oil Corporation's State 1-D, C SW NE 30-17s-35e, requires production in January. Magnolia Petroleum Company's State 3-M, C SW NW 34-17s-35e, has rigged up, and is a south offset to a well in process of completion.

Helmerich & Payne, Inc., and Continental Oil Company's State 1-G-36, southeast outpost for the Vacuum Field, pumped 60 barrels of 38-gravity oil and 3 barrels of water initial from pay at 4890-4922 feet. It has been in process of completion since the fore part of September, having drilled to 4950 feet, then plugged back for nitro shot and acid. Cities Service Oil Company's State 1-L, C SW SE 15-17s-35e, northeast outpost for Vacuum and low structurally, was abandoned after testing dry when formation tester was used at 4688-4854 feet. Amerada Petroleum Corporation's State 5-V-A, C NW SW 22-17s-35e, nearest offset to the above failure, is showing for a 125-barrel daily natural producer at 4662 feet. The Texas Company's State 1-V, southwest edge producer, is listed as a late completion, swabbing 5 barrels oil hourly for 16 hours after using 7,000 gallons of acid in broken pay at 4490-4790 feet.

Continental Oil Company et al started operations on Lockhart 6-A-18, an inside location in the older section of the Eunice Field and for Lockhart 3-B-1, offsetting production in the prolific pool dividing the Eunice and Penrose fields.

Texas Pacific Coal & Oil Company's State 7-A, East outpost for the Lynn Field, failed to increase its oil and gas yield, previously reported at 15 barrels of oil and 4,000,000 feet of gas, in deepening with cable tools to 3736 feet. It will be carried to the water level.

In the Langlie area, Repollo Oil Company has made location for State 1-C-157, SW SW SE 32-24s-37e, and Sam Weiner et al rigged up to drill Woolworth 2, SW NW SW 33-24s-37e.

Michigan Fields

Bloomingdale prospective limits are widened

Mt. Pleasant, Mich.—Indications that the Bloomingdale field, Van Buren County, covers a wider area than expected when the play was opened in mid-summer, were strengthened this week by developments on both the east and west sides of the discovery district.

Last month Ross and Leman's Landrus 1, Section 11-1s-15w, Columbia Township, 4 miles west of the townsite pool, was completed for a 50-barrel pumper from Traverse limestone at 1273 feet. This week Rex Oil & Gas Company tested an estimated 50- to 70-barrel daily producing zone in Traverse at 1272 feet on Miller 1, Section 11-1s-15w, a half mile east of the Landrus well.

Some operators see a possibility of the Columbia area eventually being connected with the townsite pool. One failure, Great Lakes Crude Oil Company's Niles 1, Section 18-1s-14w, a mile west of townsite production, drilled the Traverse dry. There is still room, however, for the pools to connect.

On the east side of the townsite play, two miles, W. M. Shoemaker's Sage 2 was completed for 300 barrels natural at 1280 feet, the second producer from this zone in Section 14.

If the new west and east plays eventually work into the discovery and townsite pools, the area would cover from 6 to 8 miles, as against an average of less than one mile for most pools so far developed in the shallow Traverse horizon in Southwestern Michigan.

For the first time in several months, interest this week focused back into North-Central Michigan, where Weber Oil Company's Floeter 1, NW SE NE, Section 31-25n-1w, Crawford County, shut down after logging an oil-gas show 5 feet in Dundee lime. Top of the lime was checked at 2976 feet. The test is 18 miles northwest of the West Branch pool.

Michigan state lease sale

Michigan operators paid bonuses aggregating $29,665 for oil-gas rights on 9461.94 acres of state-owned lands December 2 at a state lease auction. The prize bonus was $22,000 paid by Talbot Oil Company of Saginaw for a 40-acre lease in Redding Township, Clare County, rated as proven. The lease is an east offset to another state lease on which McClanahan Oil Company last month drilled a 200-barrel well.

Gulf Refining Company and Pure Oil Company were the most active bidders in the auction.

Michigan October output is down

Oil production in Michigan declined in October, both in quantity and in value, while natural gas production gained, the state tax commission reported last week. The severance tax collected was $30,361, off more than $5,350 from September.

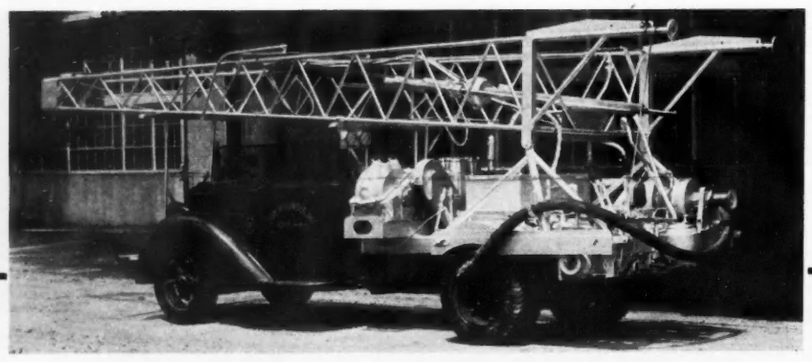
Total value of oil produced during October was $1,428,910, compared to $1,629,808 during the previous month. The state's output declined from 1,575,954 barrels in September to 1,543,812 barrels in October.

October natural gas production totaled 605,065,162 cubic feet, valued at $89,132, compared to 588,544,895 cubic feet and $74,882 during the previous month.

MICHIGAN Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Spencer Cook, Stevens 1, sw ne sw 12-1n-16w	*	1194
Columbia Oil Co., Richter 7, sw nw se 30-4n-12w	120	1587
Lima Oil Co., Gates 5, se sw ne 1-3n-14w	75	1458
R. D. Kirkham, Manson 1, se ne nw 21-1n-15w	*	1320
Lentz & Miller, Kerber 1, se nw se 24-3n-13w	*	1700
Sebright 1, ne ne se 25-3n-13w	*	1590
Arenac County—		
B. A. Bartlett, Clement 1, ne sw ne 6-18n-4e	*	3020
Barry County—		
Yankee Spring, Royes 1, ne nw nw 14-3n-10w	*	2010
Clare County—		
Daily Crude Oil Co., Van Horn 4, nw sw sw 34-19n-6w	250	3921
Isabella County—		
Gulf, Hauck 1, sw nw sw 13-15n-5w	*	3803
Midland County—		
Pure, Shell-State A2, se ne sw 27-16n-1w	75	3802
Ogemaw County—		
Rowmor Corp., McBain 1, ne ne ne 27-21n-1e	*	3363
Ottawa County—		
McClanahan Oil Co., Kooyers 1, sw sw nw 2-5n-15w	*	1598
Van Buren County—		
Consolidated, Breed 1, sw se se 7-2s-13w	*	1317
Voorhees Oil Co., Melvin 1, se se se 8-1s-14w	150	1219
Clark & Johnson, Wiggins 1, se sw sw 9-1s-14w	600	1215
J. B. Northcott, Arnold 1, nw sw nw 16-1s-14w	400	1201
J. S. Fusheanes, Lumber Co. 1, se se ne 17-1s-14w	600	1188
W. M. Shoemaker, Sage 2, sw se ne 14-1s-14w	300	1280
W. F. Kemp's Grewe 1, se se ne 17-1s-14w	190	1215
Bloomingdale Dev. Co., McNullan 1, ne se ne 17-1s-14w	300	1190
Mesel & Spielberg, Conkling 1, sw se sw 26-4s-16w	*	950

*Failures; †Junked; ¶Million cu. ft. gas.



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HOUSTON, TEXAS

California Fields

New and deeper sand reported in Signal Hill area test.

Wheeler Ridge wildcat indicates possible new oil area.

Los Angeles.—Semi-official report is that DeSoto Oil Company's DeSoto 1, deep test in the Lovelady pool of the Signal Hill field, has found a deeper productive zone and that swabbing has been under way several days in an endeavor to bring this project in from 10,156 feet. Seven-inch casing is cemented at 9745 feet. Over 400 feet of possible producing zone is reported.

Richfield Oil Company's KCL 1, a wildcat in Section 28-11-20, Wheeler Ridge, Kern County, recovered 75 stands of 40-gravity oil and gas-cut mud and oil during a formation test of interval from 8518 to 8713 feet.

Standard Oil Company will try to extend the present productive limits of the Wasco field. Its latest project, KCL 8-B-2, will be drilled in Section 17-27-24, about two miles southeast of production in the section where the company's KCL 8-B-1 failed to develop production last month. The latter had sufficient showings in the Vedder to warrant setting 7-inch casing at 13,000 feet.

Foundation has been completed for what is expected to be an interesting wildcat test along the Kern Gorge fault back of Round Mountain, Kern County, which has yielded several small fields. Cresmont Oil Company will prospect a 120-acre lease, drilling operations to be handled by the M.C.A. Drilling Company. The location is a mile north of the Eastmont pool discovery well and a quarter mile west of Pebble Beach Oil Company's abandoned No. 2.

A group of Bakersfield financiers are preparing to drill a test well on Kern river, north of Olcese ranch house, NE 2-29-29, Kern County, with the expectation of finding production in the Vedder sand around 2800 feet. No previous work has been done in this area.

Wood-Callahan Oil Company will drill another well at once on its Community lease in the Edison field, Kern County, where it recently brought in No. 21-3 for 250 barrels per day at 3570 feet. Water encroachment has compelled Francis O'Reilly to recement 8⅝-inch casing set at 2429 feet on the Kern river oil zone in No. 5-26, Section 6-30-29.

In the Torrance extension, Arthur N. Macrate's Kupfer 1-1, has been pumping into tanks at an unestimated rate from 5242 feet. Macrate's Holden 1 was completed on the pump for 130 barrels daily at 5323 feet. The Texas Company's Oakley 2, is coring below 5650 feet and may develop into a deep test for the field. Richfield Oil Corporation's Capitol 1, at 5301 feet, during a formation test, recovered 30 stands of clean oil and is slated for completion shortly.

Ohio Oil Company is completing rig foundation for KCL F-2, NEc 10-31-25, Coles Levee, Kern County, where it previously brought in KCL F-1, discovery well of a new high-gravity oil field for the floor of the San Joaquin Valley, and three miles east of Richfield Oil Corporation's Tupman-Western 1 near Elk Hills, another recent discovery.

Shell Oil Company recorded a good completion in the Canal field in KCL A-47-14, SWc 14-30-25, which gauged 900 barrels of 35.4-gravity oil per day from 8336 feet. In the Ten Section field, this company's KCL B-81-29, NEc 29-30-26, is rigging up rotary.

At Kettleman Hills North Dome, Standard Oil Company brought in No. 61-21-Q at 7960 feet for an initial yield of 2135 barrels of oil and 1,750,000 cubic feet of gas per day. The company has abandoned No. 21-13-P which prospected to 9074 feet. Its No. 41-17-Q placed on production, has been shut in to await storage construction.

The Wilmington-Long Beach oil field leads all state fields in point of excessive production. Its overage is running around 26,100 barrels daily, with Signal Hill in second place with an overage averaging 10,900 barrels daily. Dominguez is exceeding its quota by 7000 barrels and Rosecrans-Athens field is fourth with 6074 barrels daily over the desired level.

Orderly drilling to follow new Kern County strike

Los Angeles.—Discovery of commercial production on the Richfield Oil Corporation's acreage east of Elk Hills, Kern County, will not necessitate offset drilling on the Elk Hills naval reserve or other adjoining properties, it was learned this week. The well, Tupman-Western 1, Section 32-30-25, is in the center of a 6000-acre block, 2 miles east of the eastern border of the Elk Hills. In addition to this 2 miles of unproven ground the eastern slopes of the Elk Hills are at present non-productive. Because of this distance from the discovery well it is believed that there is no threat to the conservation plans of the naval reserve, or to chance of drainage, according to Commander Greenman, of the Navy Department here. Likewise, other lessees on the borders of Richfield Oil Company's property say the property for 2 miles distant from the producing wells does not necessitate offset drilling.

Tupman-Western 1 came in for 3752 barrels of 49 gravity oil per day, cutting 0.1 percent, with 18,000,000 cubic feet of gas. Bottom of the hole is 8677 feet with 8⅝-inch casing cemented at 8406 feet. Just below the 8406-foot level the well encountered a gas cap and high-gravity oil zone similar to that found in the Ten Sections field, 4 miles to the east. Again, following the experience in Ten Sections, the well later drilled into a heavier oil sand 25 feet deeper. In the original test both of these zones were left open. In the Ten Sections field it was found advisable to case off this upper zone in order to retain the high gas pressure. This is what Richfield Oil Corporation is doing.

Choked in to 1/64-inch in 20 hours the well produced 327 barrels of 48.4 gravity oil cutting 0.6 with 1,500,000 cubic feet of gas. Tubing pressure was built up to 2800 pounds and casing pressure to 2900 pounds. The company has staked no new locations and is expected to develop the new field orderly, somewhat along the same lines as that employed at Kettleman Hills North Dome.

CALIFORNIA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens-Rosecrans—		
Republic, Trust 1	150	7571
Long Beach—		
Caminol Co., Dominguez 2-10	400	7536
Montebello—		
Montebello Reservoir Oil Co., MLW 1	1960	6715
St. Helens Pet. Co., Monterey 29	145	6580
Standard, Braun 3	640	6700
Torrance Extension—		
General, Poggi 11	392	5220
A. N. Macrate, Holden 1	130	5323
Torrance—		
Louisiana Oil Co., Lord 2	310	5143
E. H. Woodyard, Killingsworth 1	297	5130
Wilmington—		
D. D. Dunlap Oil Co., Well W-4	145	3580
General, Blinn (LB) 4	278	3197
Union Pacific, U. P. (LB) EU-2	244	3592
U. P. (LB) EU-3	402	2964
East Coalinga—		
R. S. Lytle, No. 31-18F	8800	7475
Elk Hills—		
Richfield, Tupman-Western 1	3752	8677
Rio Bravo—		
General, Van Ness 4	1842	11,510
Superior, Ruhl 3	2927	11,495
Mt. Poso—		
Western Explo. Co., Hyde 1	*	1853
Strand—		
Continental, KCL E-1	*	8574
Wasco—		
Continental, KCL A-3-8	*	13,644
Round Mountain—		
Richfield, Olcese 2	*	2149
San Lucas—		
L. B. Tannehill, Quinn 1 (w)	*	2590

*Failures; †Junked; ¶Million cu. ft. gas.

Governor-elect investigating California land leases

Plans were disclosed last week by Governor-elect Olson for the investigation of leases made by the State Land Commission for Huntington Beach tideland oil production. Study of contracts, Olson revealed, will be made with the view of guiding the policies of his administration on the state oil royalties question. Olson declared that if the contracts, executed under March, 1937, special session legislation sponsored by Governor Merriam tend to "tie up" the state on future petroleum production from public tidelands in Orange County, proposals for a new enactment may be dropped as "useless." He said, however, enactment of a measure similar to the 1937 Olson oil bill will be attempted if the agreements do not bind the state in all particulars, beyond legislative right to deal with the situation. The Olson bill, defeated a month ago in referendum vote, prescribed a minimum royalty of 30 percent on private operation of the state oil lands. Governor Merriam's program calls for littoral land leasing and eliminates the 30 percent clause.

Aransas Pass order

The Texas Railroad Commission has revised its rules for the Aransas Pass field, Aransas and San Patricio counties, to include an ordinance enacted on November 3, by the City of Aransas Pass. This ordinance provides for 201 drilling districts consisting of two city blocks each, and limits drilling to one well in each district.

IMPORTANT WILDCAT TESTS

ALABAMA

Barbour—H. A. Stebbinger's Mrs. Alyce Robertson 1, ne ne 19-10-26, rur. **Choctaw**—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, owdd 7520 ft. **Greene**—R. T. Jeffrey's R. C. Lett 1, 3-20n-2e, sd 720 ft. **Lawrence**—Mid-Southern Pet. Co.'s Rob Jacobs 1, sw se 11-7-7, ruct. **Mobile**—J. C. Prine's King 2, ne ne 4-1n-4w, sd 1120 ft.

ARKANSAS

Calhoun—Samuel S. Alexander's Smythe 1, c ne ne 7-11-14, base anhydrite 2985 ft, sd 3406 ft. C. E. Murdock's Southern Kraft 1, nw nw 17-14-13, sd 3291 ft. **Columbia**—Atlantic's Francies Burnett 1, c sw se 14-17-20, dr 2100 ft. Pet. Finance Co.'s Barnett 1, c nw se 14-17-20, dr 5951 ft. Normandie Oil Corp.'s Levi Garrett 1, ne ne 23-17-20, dr 2200 ft. Standard of La.'s E. D. Harris 1, c sw ne 15-17-19, hole clean top Buckner lime 7251 ft, arr perf csg and test, td 7442 ft. Minnie Harris 1, c ne sw 15-17-19, rur. Tidewater Associated & Seaboard's J. T. Beene 1, c se nw 15-18-19, elev 232 ft, top lower Marine 5886 ft, ran electrical log, arr set csg, td 8254 ft. Southwood Oil Co.'s Levi Garrett 1, c sw sw 13-17-20, dr 5995 ft. **Craighead**—Tenn-Ark, Inc.'s Martin 1, 35-14n-3e, ruct, td 1754 ft. **Hot Springs**—J. H. James, Tr.'s Sturgess Lbr. Co. 1, sw sw se 26-6s-18w, rur. **La Fayette**—Wadley, Erwin et al's G. W. Taylor 1, c ne sw 15-19-26, woc surf csg. Ohio and Shell's Warren 1, c se se 13-16-24, woc 9⅝ csg 2259 ft. **Little River**—Barbere et al's Mills 1, se sw nw 18-12-29, ru and sd. Clark et al's Strawn 1, se sw 20-10-32, sd 215 ft. Hartford Oil Corp.'s Denning 1, ne ne sw 6-13s-30w, sd 1735 ft shale. D. L. Hersey et al's W. D. Waldrop 1, se nw 4-13-31, top anhydrite 2208 ft, arr deepen 3446 ft. **Lonoke**—Cabot Drlg. Co.'s Cabot Townsite 1, 18-4n-9w, sd 2420 ft. J. W. Anderson's Eddington 1, c nw ne 7-4n-9w, sd 910 ft. Hudson et al's Young 1, sw nw 8-3n-7w, sd 225 ft. J. F. Russell's J. T. Gunter 1, se se 17-5-10, sd 1650 ft. **Mississippi**—Benedum & Trees Oil Co.'s Winston Mack 1, nw sw 3-15n-12e, dr with ct 3440 ft. **Pike**—Bruce E. Wallace's Tilyou 1, ne se 26-8s-24w, fsg 395 ft. **Union**—Fohs Oil Co.'s Craig 1, c se ne 5-18s-14w, elev 251 ft, coring 6850 ft.

CALIFORNIA

Los Angeles—W. E. Entrikin's D-1, 7-3-13, dr sand and shale 5067 ft. Royal Land's No. 1, 8-4-17, dr hard shale 1325 ft. Richfield Oil's Dominguez Estate 1, 2-4-13, dr sand and shale 5761 ft. D. H. B. Oil's Heath 1, 34-3-11, sd 6150 ft. John McKeon's Carmenita 1, 21-3-11, will land protective string 8956 ft. Mojave Petroleum's Gorman 1, 5-8-18, dr sand and shale 450 ft. Same, Jennings 2, 33-5-14, dr sand and shale 260 ft. Continental's Newhall 1, 20-4-17, fsg drill pipe 2371 ft. Mangrum & Page's Lintz 1, 4-3-15, sd 125 ft. Newhall Drilling's Needham 4, 13-3-16, redrilling 2952 ft, td 3505 ft. Palmluck Oil's No. 1, 23-3-16, sd 25 ft. Rolling Hills Petroleum's Weston 1, 27-4-14, wocs 5100 ft. Treasure Oil's Venice 7, 34-3-15, swabbing fluid 6511 ft. Texas Co.'s Anderson-Spring 1, 9-2-15, dr shale 7063 ft. R. T. Grady's Sepulveda 1, 23-5-14, dr shale 350 ft. Hogan Petroleum's Burkhard 2, 6-5-13, dr sand and shale 3300 ft, H. C. Oil's Joyce 1, 22-2-11, rur. **Orange**—Texas Co.'s A-13, 8-4-10, lcn. New Fields Oil's No. 1, 16-5-11, sd 4100 ft. Shell's Irvine 1, 6-7-9, dr sand and shale 2100 ft. A. V. Oil's No. 1, 16-6-10, sd 4751 ft. Shell's Dunford 1, 22-3-9, dr shale 1299 ft. **San Bernardino**—Carbon Canyon Oil's Schuh 1, 30-2-8, rig. Southern Counties Petroleum's Los Serranos 1, 22-2-8, dr sand and shale 2700 ft. **San Diego**—Dauphin Development's Irwin Kelly 1, 16-12-4, fsg drill pipe 805 ft. Same, Dunn 1, ?-12-4, rig.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
bs—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper.*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut-down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

SAN JOAQUIN VALLEY

Fresno—Robert S. Lytle's No. 37-7F, 7-20-16, rur. Same, No. 71-18F, 18-20-16, rig. Standard's No. 71-13C, 13-20-15, rig. Same No. 1-17F, 17-20-16, dr sand and shale 5421 ft. Superior's Cagle 1, 6-20-16, dr sand and shale 5050 ft. Same, Coalinga Fee 2, 7-20-16, dr sand and shale 6737 ft. American Oilfields' Investment 1, 16-19-15, sd 180 ft. General Petroleum's Esperanza 101, 6-20-15, lcn. Same, No. 102, 6-20-15, lcn. Leo F. Jarvis' No. 2, 14-20-14, sd 150 ft. Foreign Oil's Bush 1, 6-21-15, lcn. Progressive Oil's California 3, 20-19-15, sd 50 ft. Stuart Oil's Stuart 1, 12-21-14, dr blue shale 1175 ft. Tide Water Associated's Fleishcaker 57-1, 1-19-15, dr sand and shale 6699 ft. Dauphin Development's Ragan 1, 19-21-14, fsg drill pipe, circulating oil 4425 ft. Cyrus Pierce's Shorb 1, 16-14-12, dr shale 1675 ft. **Kern** — California Exploration's California Lands-Dougherty-Salisbury 1, 7-29-24, dr sandy shale 9055 ft. Shell's KCL B-87-4, 4-30-25, dr shale 9866 ft. Standard's KCL?-1, 9-31-25, lcn. Gibson Oil's Alferitz 3, 14-25-18, standing plugged 1230 ft. G. E. Renner's R.H.L. 2, 27-30-30, dr sand and shale 2320 ft. Hillview Oil's El Tejon 1A, 11-30-30, lcn. Shell's KCL A-58-8, 8-27-26, dr sand 9050 ft. Texas Co.'s Camp-West-Lowe 1, 7-29-27, redrilled 10,122 ft, cored volcanic rock at 10,110 ft, td 10,122 ft. Petrol Corp.'s Reserve-Petrol 33-5, 33-11-19, sd 6988 ft. Richfield Oil's KCL 1, 28-11-20, r 8713 ft. Tide Water Associated's S.P. 2, 15-11-19, dr sand and shale 3944 ft. Superior's KCL 12, 3-30-26, dr sand and shale 7779 ft. D. D. Angle's Claflin 2, 10-27-27, sd 2169 ft. Framac Oil's Brown 3, 22-27-27, sd 1355 ft. Frank M. Gilstrap's Carter 1, 7-27-27, dr sand 300 ft. F. M. Pottenger's Girard 1, 35-25-28, dr granite 645 ft; same, Villard 2, 2-26-28, lcn. Milburg Violette's Violette 1, 27-26-28, rur. Julius Freid's No. 1, 34-32-24, wocs 5035 ft. Richfield Oil's Union Avenue 1, 6-30-28, dr shale 8255 ft. Standard's Mushrush 2, 7-27-24, rig; same, KCL 8B-2, 17-27-24, lcn. **Kings**—Tri-Counties Oil's Olson 1, 10-23-22, sd 7769 ft. Athalie Irvine's No. 1, 11-24-20, sd 2495 ft.

COASTAL COUNTIES WILDCATS

Santa Barbara—Litho Oil's Rhode Island Estate 1, 4-4-30, rig. Douglas-Stratton's No. 1, 8-8-33, dr brown shale 7238 ft. Richfield Oil's Tinaquaic 1, 36-9-32, dr sand and shale 2300 ft. Barnsdall's Magenheimer 5, 9-8-32, sd 3035 ft; same, Pezzoni 1, 15-8-32, sd 4494 ft. Oil Group's Hyland 1, 16-4-26, rig. **San Luis Obispo**—California Petroleum's Job 1, 6-10-24, sd 2210 ft; same, Irons 1, 19-10-24, plugged 1500 ft, td 1710 ft. Harry E. Lee's Defiance 1, 7-32-22, sd 290 ft. Temblor Oil's Temblor 1, 22-31-21, sd 3465 ft. Western Plains' Bell 1, 7-31-21, sd 4010 ft; same, Bell 2, 2-32-21, sd 2620 ft. Loma Grande Oil's Luis 1, 28-31-13, sd 2125 ft. Vanguard Oil's Clark 1, 26-27-24, sd 4951 ft. Epco, Inc.'s Epco 1, 27-26-13, dr gray sand 2680 ft. **Ventura**—High Mesa Oil's Butchrer 1, 16-4-22, dr sand 1765 ft. Claran Oil's Hardison 7-E, 13-4-19, co 575 ft. Crystal Oil's Crystal 1, 35-5-20, sd 250 ft. H. A. Ivers' Kentuck 14, 1-4-20, lcn. Charles R. McKinnis' Coslev 1, 14-4-19, sd 1090 ft. Merchants Petroleum's Cochrane 8, 1-4-20, dr oil sand and shale 1390 ft. St. Louis Oil's Williamson 1, 1-4-20, bailing oil 1625 ft. El Rancho Oil's Elkins 2, 9-3-19, rig. Texas Co.'s Shiells 136, 4-3-19, rig. Section 20's No. 1, 20-5-19, dr shale and oil sand 2358 ft. Hardison & Temple's No. 1, 22-4-21, wocs 656 ft. J. W. Martin's Arnett 1, 15-4-21, sd 1230 ft. Stallings, Senter & Ahlburg's Stallings 1, 24-4-21, pumping water 1445 ft. Ventura Drilling's Canet 1, 10-3-23, rigging up heavier equipment 2025 ft. Ventura Exploration's Sexton 1, 30-3-22, co 9470 ft, wocs td 9511 ft.

NORTHERN CALIFORNIA

Colusa—Empire Oil & Gas Corporation's Saver 1, 15-15-4, lcn. **Madera**—Amerada Petroleum's Dos Palos Core Hole A, 13-11-12, dr sand 210 ft. **Monterey**—A. A. Anderson's Hillman 1, 15-24-14, wocs 4004 ft. L. B. Tannehill's Quinn 1, 35-20-4, abd 2590 ft. **Solano**—Richfield Oil's Potrero Hills 1, 10-4-1, redrilling 3214, td 5334 ft. **Stanislaus**—Orestimba Oil's Simon Newman 1, 12-7-7, dr hard black shale 1450 ft.

FLORIDA

Levy—Fla. Discovery Oil Co.'s Sholtz 2, sw sw ne 9-15s-13e, top chalk 3110 ft, gas odor 3853 ft, dr 4092 ft shale. **Nassau**—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, elev 110 ft, fsg at 4320 ft. **Polk**—Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk. **Suwannee**—J. W. Phillips Oil Expl. Co.'s Shilkett 1, nw nw 14-4s-14e, spd and sd. Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, sd 203 ft.

KANSAS

Barton—Carlock & Atlantic's Domel 1, ne nw 30-17-13w, dr 3130 ft. Long & Johnson's Eveleigh 1, sw ne 3-18-14w, ur 6-inch, td 3166 ft, so. Murfin et al's Birzer 1, ne sw 21-19-11w, dr 1835 ft. Newton & Pulse et al's Hagen 1, swc 20-20-11w, rust 3326 ft. **Butler**—Higgens & Pierce 1-A, Shrieves, ne nw se 22-26n-4e, rur. Simpson & Estes' Farm 1, se ne ne 30-27-7e, mirt. **Cowley**—Henderson's King 1, nec 22-31-4e, dr 1435 ft. **Dickinson**—Franks' Huffman 1, nw sw 11-13-1e, sd 1385 ft. **Ellis**—Carlock's Philips 1, se nw ne 10-15-17w, mim. Sinclair Prairie et al's Mary Prusa 1, sec 20-16n-11w, td 3352 ft, testing. **Graham**—Continental's Putnam Investment Co. 1, cwl sw 3-9-21w, rur. **Greenwood**—Reed & Trustee's Shell 1, nw se 17-28-11e, 6-inch to 1200 ft. Turner et al's Black 1, se ne nw 3-27-13e, dr 200 ft. **Kingman**—Duwe & Farris et al's Kimminan 1, ne nw sw 12-30-9w, dr 3245 ft. **Marion**—Johnson et al's Miltz 1, swc 24-17-4e, co 2300 ft. Cox & McGinnis & Saco Oil Co.'s Joliffe 1, c s½ sw se 2-22-5e, co 2060 ft. **McPherson**—Marylyn Oil Co.'s Dixon 1, nw ne nw 7-19-2w, dr 2935 ft. **Ness**—Carlock & Cullum's Smith 1, c sw se 11-17-25w, dr 4670 ft. Oriental Oil Co.'s Beardslee 1, nec 21-18-25w, rog. **Osage**—Edwards et al's Detrick 1, nw se 21-14-15e, rur. **Ottawa**—Babcock's Copeman 1, cnl s½ s½ se 7-10-2w, co 2842 ft. **Rice**—Cities Service's Dewitt 1, csl ne 33-19-9w, dr 900 ft. Cities Service et al's Murphy 1, cwl ne 9-19-9w, woc 247 ft. Tatlock's Proffitt 1, sw se sw 12-20-10w, sd 2850 ft. Tatlock's Proffitt 1, sw ne 23-20-10w, dr 3390 ft. Virginia Drilling Co.'s Clawson 1, sw nw 17-20-11w, dr 2425 ft. Garden Prod. Co.'s Werner

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1, ne 10-21-9w, dr 1575 ft. **Rooks**—Producers' Ham 1, sw nw 25-7-19w, dr 2615 ft. Darby Pet. Corp.'s Peavey 1, nw ne 24-11-18w, rust 3434 ft. **Rush**—Cities Service's Hall "D" 1, cnw¼ 2-12-17w, sd 3457 ft. **Russell**—Nelson's Polcyn 1, sw 31-13-15w, dr 2585 ft. Phil-Han, Inc.'s Weimeister 1, swc 18-14-13w, td 3230 ft, to pb. Wakefield's Meharg 1, sec 16-15-13w, rog. **Sumner**—Cameron & Spencer's Frey 1, nwc 5-30-1e, fsg 3150 ft.

SOUTH LOUISIANA

Assumption—Humble's Milliken & Farwell 1, Labadieville area, 15-14-14e, dr shale 5007 ft. **Calcasieu**—Humble's Miller 1, Chalkley area, 32-11s-6w, dr 8379 ft. **Cameron**—Federal Royalty Co.'s State 2, Calcasieu Lake, 13s-9w, dk. Pure's Calcasieu National Bank 3, Lowry area, 19-12s-4w, abn 8050 ft. **Iberia**—Texas Co.'s State 5, Fausse Point, 35-11s-8e, dr 8530 ft. **Iberville**—California Co.'s Schwing Lbr. & Shingle Co. 1, Bayou Sorrel, 96-10s-10e, canal. **Lafourche**—Texas Co.'s LaTerre 1, Golden Meadows, 1-20s-21e, comp. 628 bbls daily 8520 ft. **Orleans**—W. T. Burton's State 1, in Lake Ponchartrain, 10s-13e, dr 9696 ft; Faubourgde Monteluzin 2, Lake Ponchartrain, 11s-13e, woc 9410 ft. **St. Barnard**—Gulf's State RR 4, Lake Borgne, 12s-15e, dr 8109 ft. Vendome Pet. Corp.'s Kennelworth 1, Shell Beach, 59-13s-14e, dr 780 ft. William Helis' Nunez 1, Chalmette area, 34-12s-12e, dr 4209 ft. **St. James**—Shell's Schexneyder 1, LaPice, 38-12s-15e, dr 4886 ft. **St. Charles**—Texas Co.'s L. L. & E. Paradis 1, 40-14s-20e, dr 1960 ft. **St. Martin**—Shell's Burdin 1, West Lake Verrett, 15-14s-12e, comp 163 bbls daily, 8020 ft. Texas Co.'s St. Martin Land Co. 11, Henderson, 21-8s-7e, woc 8065 ft; State 6, Lake Mongouloui, 10-10s-9e, dr 10,390 ft. **Terrebonne**—Texas Co.'s Continental Land & Fur Co. 1, Lake DeCade, 29-18s-14e, dr 10,256 ft; State 2, Caillou Bay, 22s-14e, sd 2850 ft.

NORTH LOUISIANA

Bienville—Ark. La. Gas Co.'s Davis Lbr. Co. B-1, sw nw sw 7-16n-4w, elev 295 ft, chalk 2526-2791 ft, massive anhydrite 5393-5639 ft, tested est 50 mil ft gas 5844-76 ft, 5½ in csg 7166 ft, pb to 5880 ft, perf 5860-80 ft, gauged 22,879,000 cu ft gas, td 7201 ft. Ark. La. Gas Co.'s Gayoso 2, sw se 14-16n-10w, woc 196 ft. Producers O&G Co.'s Graves-Thomas 1, se sw se 23-15n-10w, woc 180 ft. **Caddo**—Ark. Fuel Oil Co.'s F. F. Webb 1, c nw sw 4-16n-13w, elev 168 ft, massive anhydrite 4355-4615 ft, ran electrical tester, sd 6010 ft, contract depth. Colonial Corp.'s Thigpen-Herold 1, ne sw 34-22n-16w (6000 ft test), 9⅝ in csg 1500 ft, dr 3510 ft. J. Thos. Driscoll's Woolworth 1, se se 19-18n-14w, woc surf csg. Harry Hanbury's Loe 1, se sw 23-18n-14w, dr 3105 ft. C. D. Loe's Lionel Meyer 1, sw se 33-18n-14w, elev 224 ft, massive anhydrite 4390-4660 ft, tested sw 5632 ft, pb perf 5600-08 ft, tested sw, so, co to test again, td 5632 ft. Oil's Inc.'s Cazaux 1, 16-16n-13w, 8¼ in csg 2700 ft, td 3502 ft. J. Weil's Dreyfuss 1, sw sw 20-18n-14w, lcn. R. O. Carter et al's Marks Meyer 1, 34-18n-14w, lcn. R. E. Allison's Mabry-Jones 1, se se 21-18-14, 9⅝ in csg, td 2330 ft, dr 5065 ft, black shale, strks lime; Ellerbe 3, sw ne 28-18n-14w, rur. Ellerbe 4, nw ne 34-18n-14w, dr 2672 ft; Ellerbe 5, 35-18n-14w, dr 2355 ft. J. T. Parks et al's Grayson 1, se se 30-19n-15w, woc surf csg. Rodessa O&G Co.'s Chandler 2, nw se 34-18n-14w, dr 1010 ft. Ablon & Edmonson's R. Hayle 1, sw nw 20-18n-14w, mim. W. C. Feazell's T. R. Hughes 1, se se 33-18n-14w, rur. **Catahoula**—Sibley-Sabine Oil Corp.'s Peck 1, 36-10n-8e, sd 2890 ft. **Claiborne**—E. T. Oakes et al's E. C. Kilgore 2, nw se 28-21n-5w, cored 9 ft saturated Pettet lime 7-in csg 5288 ft, arr run 4½ in welded csg, td 5317 ft. **De Soto**—S. S. Alexander's Stell A-1, ne ne 5-12n-16w, elev 252 ft, top Washita 2710 ft, flowed oil and made 2 mil ft gas, pumped 3 to 5 bbls oil daily at 2761 ft, sd 3010 ft. **Madison**—Continental Oil Co.'s Singer Mfg. Co. 2, c 2-15n-11e, ran electrical log, dry abn, td 4486 ft (Midway). **Red River**—Magnolia's Pugh 59, se nw 12-12n-11w, elev 140 ft, top lower Cretaceous 2592 ft, top anhydrite 4725 ft, dr 6130 ft shale and lime. N. W. Hunter's M. LeLong 1, nw nw 33-12n-10w, dr 2990 ft. **Sabine**—Earl Fox et al's Cook Ld. Co. 1, se nw 1-9n-12w, owdd 3655 ft. LeGrande et al's Tatum 1, nw ne 17-8n-13w, 700 ft oih, arr pump, td 2340 ft. Tropical Oil Co.'s Long-Bell 1, 5-8n-13w, arr deepen 3507 ft. Zwolle Synd.'s Mansfield Hdw. Co. 1, ne ne 8-7n-13w, pb and testing Zwolle chalk 2120-2260 ft, td 4325 ft. **Tensas**—H. B. Schumacher's Mounds 4, 39-11n-12e, arr make test, td 2450 ft. **Webster**—Magnolia's Pardee C-1, c nw ne 17-23n-11w, elev 203 ft, dry so 6025 ft, top Travis Peak 6054 ft, top lower Marine 7998 ft, cored 6 ft sand, so 8504-10 ft, dr 9918 ft, hd sand. H. M. Branton 1, ne sw ne 6-22n-9w, elev 226 ft, top anhydrite 4225 ft, dr 6355 red shale strks sand; Roseberry-Bailey 1, se 29-23n-9w, rur. Union Prod. Co.'s Walker-Morgan 1, c se 30-18n-8w, dr 4625 ft lime and shale.

MICHIGAN

Allegan—Leighton's Martin 1, 9-2n-15w, dr 560 ft. M. T. W.'s Mulac 1, 16-1n-15w, lcn. Michler's Harlan 1, 27-1n-12w, dr 234 ft. Tamblyn's Gilmore 1, 36-2n-12w, lcn. Sowell's Arbanas 1, 3n-11w, sd 1810 ft. **Barry**—Collin's Simmons 1, 3-4n-10w, sd 1942 ft. **Bay**—Gulf's Bateson 1, 2-14n-4e, testing water seal 3092 ft. **Berrien**—Bloomingdale's Tabor 1, 33-5s-17w, rig. Sprenger's Bihlmire 1, 35-3s-17w, lcn. **Calhoun**—Verona's Fruin 1, 29-1s-7w, dr 2550 ft. **Clare**—Daily's Thomas & Rand 1, 28-20n-6w, Antrim 2438 ft, dr 2846 ft. **Clinton**—McDonald's Koeppen 1, 19-6n-3w, sd 2600 ft. **Crawford**—Weber's Floeter 1, 31-25n-1w, Dundee 2976 ft, so&g 2980 ft, sd 2981 ft. **Gladwin**—Bridger's State 1, 29-19n-2e, Dundee 3307 ft, wocs 5-in 3306 ft. **Huron**—Leonard Prospecting's Milling Co. 1, 10-16n-15e, Dundee 1927 ft, Monroe 2225 ft, 5-inch casing 2355 ft, sd 4482 ft. Teater's Kerr 1, 27-16n-13e, dr 2590 ft. **Leelanau**—Lupher's Wilce 1, 34-28n-14w, dr 800 ft. **Mackinac**—Van Kuren's Hiawatha 2, 27-44n-9w, dr 935 ft. **Midland**—Andrew's Harris 1, 14-16n-1e, dr 1300 ft. Weller's Helpinstall 1, 9-13n-2e, dr 2700 ft. Teater's Kalama 1, 35-16n-2w, spudding. **Missaukee**—Moser's Scherenhelm 1, 36-23n-7w, dr 1000 ft. **Ogemaw**—Caldwell, Inc.'s State 9, 6-21n-3e, dr 2600 ft. **Osceola**—Champion's Ealy 1, 30-20n-8w, dr 906 ft. Franklin's Johnson 1, 26-19n-7w, dr 3890 ft. Michigan Devonian's Reddy 1, 10-18n-7w, dr 900 ft. **Ottawa**—Gordon's Homick 1, 23-7n-15w, dr 200 ft. Carscallen's Longnecker 1, 4-7n-13w, rig **Van Buren**—Lacota's Biedenkopf 1, 2-1s-16w, rig. Truss' Wilcox 1, 8-2s-14w, lcn.

MISSISSIPPI

Calhoun—L. C. Lucas' E. C. Boland 1, sw se 9-22n-9e, top Selma chalk 738 ft, sd for csg 792 ft. **Clarke**—J. L. Ryan's M. Eddins 1, sw sw 29-2n-14e, sd 500 ft. **Hinds**—Cleve Love et al's S. F. Johnson 1, ne se 29-6n-1w, elev 343 ft, cored sand 5144-50 ft, ran electrical log to 5150 ft, sd 5218 ft sand. **Pike**—A. N. Simpson et al's Cupit 1, 25-2-7, dk and mir. **Simpson**—Cleve Love et al's N. E. Garner 1, sw ne 1-10n-17w, dr 920 ft. **Yalabousha**—Chas. W. Crader's Jno. Bruce James 1, ne ne 24-11s-6w, dr 1120 ft. Griffin & Melvin's Smith-Warren 1, nw se 6-24n-6e, mim.

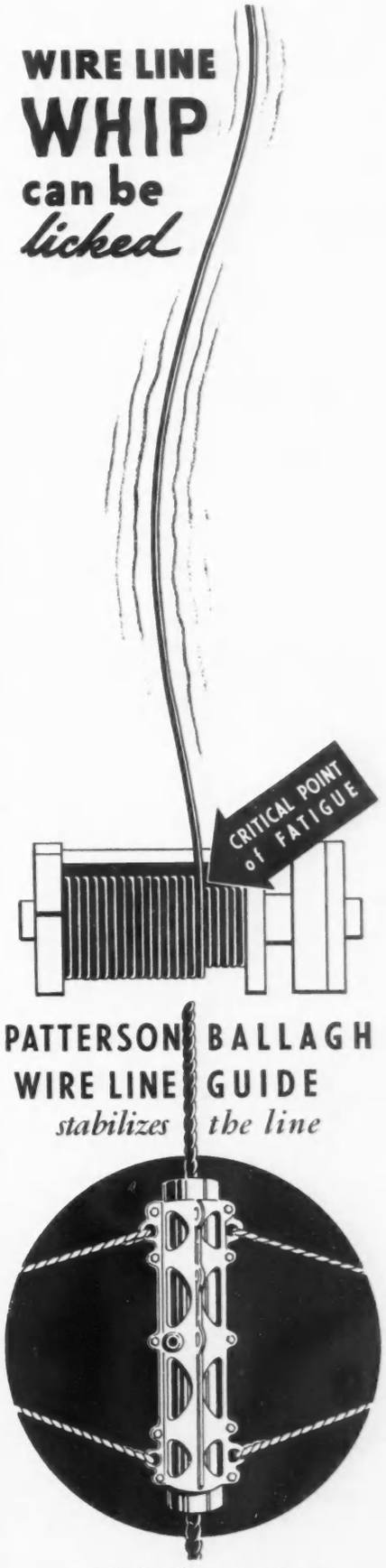
OKLAHOMA

Carter—Pure's Noble 1, c ne se 35-3s-1e, dr 3380 ft. **Choctaw**—Ross et al's Hardy 1, sec nw 21-7s-15e, dr 1335 ft. **Cleveland**—Harper & Turner's Taylor 1, se ne nw 23-8n-2w, dr 4020 ft. Nels-Burrton's Hirsch 1, nwc ne 17-9n-2w, to swab, td 7695 ft. Big Chief Dr. Co.'s Stratiger 1, nwc sw 25-9n-2w, fsg 7190 ft. Burke-Greis' Alberts 1, se sw nw 19-7n-1w, woc 61 ft. **Cotton**—Turner et al's Collins 5, c ne ne 18-4s-10w, sd 1309 ft. **Grady**—Winkler's Chapman 1, sec ne 23-4n-6w, rur. Carter et al's Smith 1, c se sw 25-5n-8w, dr 5600 ft. **Hughes**—Phillips' Mandler 1, se sw sw 1-6n-10e, dr 4595 ft. Wood's Aldridge 1-A, sw nw ne 5-8n-8e, dr 450 ft. **Jefferson**—Davis et al's Barrett 1, ne se se 14-6s-6w, sd 1890 ft. **Kay**—Crawford et al's Boehl 1, sec nw 34-27n-2w, sd 1000 ft. Tidewater Associated Oil Co.'s Hickman 1, nwc ne 19-28n-1e, to pb to 2222 ft. **Kingfisher**—Gutowsky et al's Lankford 1, nec se 34-17n-6w, mirt. **Kiowa**—Emerson's Handcock 1, sec ne 26-6n-15w, dr 500 ft. **Lincoln**—Bland's Miller 1, nec se 31-16n-6e, lcn. Starr O&G Co.'s Georgia 1, se sw ne 35-18n-4e, rur. **Noble**—Phillips' Robertson 1-A, nw ne sw 29-24n-1w, dr 4495 ft. **Okfuskee**—Mead Prod. Co.'s Pine 1, swc nw 14-12n-11e, ur 8-inch, td 2845 ft. **Oklahoma**—Walters et al's Olmstead 1, c e½ se nw 12-14n-3w, pits. **Pawnee**—Kelly's Hill 1, swc se 1-21n-5e, sd 1110 ft. **Payne**—Starr et al's McKenzie 1, swc ne 13-18n-3e, dr 3050 ft. **Pontotoc**—Stanolind's Norris 3, ne sw se 25-2n-6e, rust. Casey's Pace 1, swc ne 14-2n-7e, sd 399 ft. Patsy O&G Co.'s Spence 1, nw se se 19-2n-8e, dr 3385 ft. Union Dev. Co.'s Abbott 1-A, sw nw ne 34-3n-6e, dr 3975 ft. **Pottawatomie**—Wood Oil Co.'s Peters 1, sw se nw 28-8n-4e, lcn. **Seminole**—Atlantic's Atkinson 1, nwc sw 17-6n-6e, rur. **Sequoya**—Thompson Bros.' Ruby 1, nwc ne 30-12n-22e, rur. **Tillman**—Smith's Hamel 2, ne nw nw 6-5s-15w, sd 2380 ft. **Washita**—Continental's Proctor 1, c nw¼ 28-10n-20w, dr 10,250 ft.

WEST TEXAS

(This report is confined to the north portion of the Permian zasin).

Andrews—Anderson-Prichard Oil Corp.'s W. F. Cowden-strip 1, sec 102, used 1500 gals acid 4226 ft, flowed 150 bbls initial, testing; W. F. Cowden-strip 2, sec 102, td 4233 ft, swab and glowed 250 bbls initial, sd for acid; Cowden-Strip 3 and 4, sp and sd. Anderson-Prichard Oil Corp.-Osage Drl. Co.'s University-Humble 1, se se se sec 13, blk 14, dr 1690 ft. Great Western Producers, Inc.'s Holt 1, c ne ne T&P sec 1, blk 43, T-1-N, elev 3124 ft, top anhydrite 1765 ft, top salt 1783 ft, top Yates 3000 ft, pb fr 4479 to 4476 ft, shot 110 qts 4450-76 ft, pumped off, deepened to 4522 ft, testing. Montecito Corp. et al's E. Cowden-Sinco 3, near nwc T&P sec 1, blk 44, T-2-N, elev 3169 ft, pay 4120-4224 ft, used acid and shot 400 qts 4074-4174 ft, flowed 130 bbls initial ¾-in choke; Cowden-Sinco 4, se ne nw sec 1, dr plugs 3950 ft. Rogers & Rogers' University 1, near c e½ sw¼ sec 40, blk 9, elev 3149 ft, top Yates 2930 ft, top lime 4020 ft, td 4539 ft, flowed water, pb to 4466 ft, shot 195 qts 4388-4466 ft, testing; University 1-A, sec 20, blk 9, mim. The Texas Co.'s Uni-



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versity 1-H, nw ne se sec 4, blk 14, elev 3165 ft, top anhydrite 1670 ft, top Yates 2790 ft, sul w 4540-4856 ft, pb to 4083 ft, perforated 18 shots 2920-50 ft, showing for gasser. J. W. Tripplehorn et al's M. A. Thornberry 1, nec PSL sec 2, blk A-42, top salt 1790 ft, top Yates 2840 ft, td 4476 ft, shot 600 qts 4300-4468 ft, sd to acidize. L. H. Wentz et al's W. F. Cowden 1, nec T&P sec 3, blk 43, T-1-N, elev 3129 ft, top Yates 2780 ft, sul w 4428-4436 ft, pb to 4428 ft and shot 105 qts 4390-4428 ft, so&w, dry and abd. H. C. Wheeler et al's Farmers State Bank (Carlton)-Gulf 1, c se sw PSL sec 18, blk A-36, elev 3207 ft, top anhydrite 1880 ft, top Yates 2930 ft, top lime 4030 ft, used 5000 gals acid 4615 ft, dd to 4681 ft, swab 21 bbls fluid 10% water, 6 hrs, sd to acidize. **Cochran**—T. G. Shaw et al's C. S. Dean-Texas Co. 1, s¼ League 94, Mills C.S.L. sur, mim. The Texas Co.'s H. T. Boyd 1, near c labor 25, league 56, Oldham C.S.L. sur, elev 3671 ft, top anhydrite 2295 ft, top brown lime 3910 ft, rust 5000 ft, dr plugs. **Dawson**—Daw-Tex Oil Co.'s J. E. Neeley 1, c nw nw T&P sec 28, blk 35, T-6-N, cem sur pipe. **Dickens**—Humble's Matador L&C Co. 1, c sw ne sec 26, blk 1, Shock-Arnold sur, cem 10-in 440 ft. **Gaines**—Harry Adams et al's G. Crain-Ohio 1, c e½ sw nw W. T. sec 216, blk G, elev 3413 ft, top anhydrite 2203 ft, top Yates 3280 ft, top brown lime 4370 ft, dr 4670 ft. Amerada's T. S. Riley 2, c sw se W. T. Ry. sec 229, blk G, cem 9⅝-in csg 3033 ft. Magnolia & Atlantic's Havemeyer-Jenny 1, c sw sw W. T. sec 219, blk G, elev 3352 ft, pay 5033-72 ft, flowed 254.4 bbls oil and 6,000,000 ft gas natural. **Garza**—Gulf Oil Corp.'s S. P. Swenson Cattle Co. 1, c nw H&GN sec 25, blk 2, elev 2274 ft, trace oil 6277 ft, td 8104 ft, hard granite, pb to 7400 ft, cem 7⅝ cas 7400 ft, perforated 10 shots 7327-34 ft, flowed 259 bbls 36.7° net oil in 32 hrs via cas, then showed water. Testing via tubing and packer. **Hockley**—C. W. Murchison et al's Alex Slaughter 1, nec labor 19, league 37, Zavalla C.S.L. sur, pay 4981-5056 ft, used 10,000 gals acid, flowed 656 bbls initial. E. T. Marion-Penn Royalties, Inc.'s Lawless-Sundown Gin lot 1, swc labor 58, league 39, Maverick C.S.L. sur, rur, td 88 ft. The Texas Co.'s Mallett L&C Co. 1-B, swc labor 1, league 52, Scurry C.S.L. sur, elev 3569 ft, top anhydrite 2290 ft, top Yates 2850 ft, top brown lime 3780 ft, top solid lime 4180 ft, top pay 4952 ft, td 5035 ft, used 6000 gals acid, flowed 179 bbls initial; Bob Slaughter 3, labor 66, Maverick C.S.L. sur, league 39, elev 3547 ft, top anhydrite 2180 ft, top salt 2270 ft, top Yates 2770 ft, pay 4930-84 ft, td 5003 ft, used 8500 gals acid flowed 260 bbls initial; Slaughter 4, n line labor 67, league 39, Maverick C.S.L. sur, dr 4861 ft. **Kent**—Ray Dowson et al's Haggins 1, near c nw ne H&GN sec 118, blk 1, sd 108 ft. B. Dolman et al's C. V. O'Keefe 1, ne ne nw H&GN sec 50, blk 1, sd 300 ft. **Lynn**—J. L. Baldridge et al's Alamo Lumber Co. 1, ne sw sw HE&WT sec 151, elev 3267 ft, top anhydrite 2130 ft, top Yates 2900 ft, top San Andreas 4170 ft, sd for cas 4450 ft. **Martin**—T. G. Shaw Oil Corp.'s H. N. Wilkinson 1, ne ne se sec 35, blk A, Bauer-Cockrell sur, elev 2519 ft, top lime 3190 ft, fsh 3405 ft. **Yoakum**—J. E. Mabee et al's W. N. Willard 1-D, nec nw sec 741, blk D, elev 3556 ft, top anhydrite 2340 ft, top Yates 3140 ft, top brown lime 4090 ft, top solid lime 4560 ft, pay 5040-5227 ft, used 6000 gals acid, flowed 2840 bbls potential; Willard 2, near c e½ of e½ nw¼ sec 741, mim. H. K. Riddle-S. C. Yingling's N. Barrier-Gulf 1, c ne se sec 6, blk D, elev 3564 ft, top anhydrite 2640 ft, top Yates 3440 ft, top brown lime 4430 ft, top solid lime 4740 ft, dry and abd 5501 ft. Shell's J. M. Ruyts 1, sw nw nw sec 743, blk D, elev 3544 ft, top anhydrite 2380 ft, top Yates 3190 ft, top brown lime 4160 ft, top solid lime 4650 ft, broken pay 5060-5266 ft, pumped 58 bbls fluid 20% bs&w, 24 hrs, sd for acid; Waples-Platter Co. 1, c ne sec 616, blk D, lcn.

EAST TEXAS

Anderson—Barnsdall Oil Co.'s W. L. Tubbs 2 (40-ac), Sam Edmondson sur, Cayuga Trinity test, elev 329 ft, top Woodbine series 4102 ft, top Georgetown lime 4670 ft, dr 6280 ft. **Cherokee**—C. C. Lanier et al's A. T. O'Neal 1 (131.6-ac), J. M. Procella sur, 3 mi e Troup, lcn. John R. Bunn Drl. Co.'s S. W. Lang 1 (371-ac), Levi Jordan sur, 7 mi s Rusk, dr 1200 ft. **Dallas**—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi e Grapevine, sd 2400 ft. **Henderson**—Humble-Tide Water-Seaboard's S. S. McGee 1 (342-ac), R. Acosta sur, Opelika Trinity test, elev 424 ft, Pecan chalk 2579-2851 ft, Austin chalk 3670-4012 ft, top Woodbine 4335 ft, top Georgetown (broken) 5160 ft, hard lime 5195 ft, dr 5560 ft. J. V. Scrivenor et al's Wm. Richardson 1, F. Holland sur, Stockard area, 6 mi nw Athens, rur. **Houston**—Humble's Dailey & Taylor 2 (500-ac), J. G. Thompson sur, Pecan chalk 4254-4320 ft, Austin chalk 5240-5573 ft, top Woodbine series 5840 ft, water sand 5867-77 ft, run cas; R. Smith-Jim Burns 2 (132-ac), J. G. Thompson sur, lcn. John G. Mayo et al's E. C. Lively 1 (217-ac), S. Rogers sur, 4 mi ne Grapeland, elev 383 ft, Pecan chalk 4576-4980 ft, top Austin chalk 5486-5802 ft, top Woodbine 5885 ft, dry and abd 5910 ft. Wynne Drl. Co.'s Aggie Price 1 (117-ac), T. Strother sur, 4 mi w Grapeland, elev 480 ft, top Pecan chalk (broken) 4478 ft, top hard chalk 4490 ft, dr 4950 ft. **Kaufman**—Sam Knoerr et al's J. P. Hunter 1 (17-ac), P. Walker sur, 5 mi s Terrell, dk. W. S. McGee et al's Pritchett 1 (15-ac), J. Hendricks sur, 7 mi w Mabank, Austin chalk 2092-2470 ft, top Woobine 2294 ft, sd 3104 ft. J. F. McLaughlin et al's Wood-Nash 1, J. C. Cortez sur, ¾ mi se Scurry, dk. **Lamar**—Dahl Bros. & Barr's Lewis-McCuiston 2 (10-ac), R. Russell sur, 1 mi ne Paris, elev 523 ft, sp and sd. **Rains**—McKinley & Hastings' McTaggert 1 (21-ac), B. Miller sur, 1 mi w Emory, sp and sd. **Red River**—Bentley-Sheppard & Stevens' Southern Pine Lumber Co. 1, Geo. S. Parks sur, 17 mi n Clarksville, sp and sd. Daniels et al's J. J. Gaston 1 (657½-ac), J. Guest sur, 2 mi s Detroit, elev 468 ft, dry and abd 1109 ft. M. H. Harrell-Watters et al's J. Phamplin 1, Wm. Moore sur, 3 mi se Kanawha, elev 470 ft, Pecan chalk 78-85 ft, top Red Beds 450 ft, sd 780 ft. C. E. Whitehead et al's R. H. Ringwald 1 (56-ac), A. Moore sur, 1 mi nw Manchester, elev 459 ft, dry and abd 630 ft. **Smith**—J. H. Thomason et al's J. W. Bartlett 1 (112.84-ac), R. G. Stewart sur, ½ mi se Jamestown, sd 1802 ft. **Van Zandt**—W. S. King et al's Edna Watson 1, M. C. Whitager sur, 5 mi s Grand Saline, elev 489 ft, dry and abd 2600 ft. F. A. Richardson et al's B. C. Dodd 1 (180-ac), T. W. Hutcherson sur, 2 mi s Grand Saline, elev 427 ft, td 4278 ft, pb to 4050 ft and sd.

EAST TEXAS BORDER COUNTIES

Harrison—R. S. Barnwell's Mrs. Luther Smith 1, A. D. Hope sur, elev 185 ft, testing, td 2830 ft. W. S. King's T. J. Taylor 1, Henry Martin sur (1 mi e Karnack), spd, arr set surf csg. **Marion**—Vestal et al's Moseley 1, D. Lane sur, lcn abn. Tom Bell's Moseley 1, D. Lane sur, testing, td 2574 ft. **Panola**—E. P. Pewitt et al's Rushing 1 (751-ac), spd, install heavier rig 30 ft. McDonald & Campbell's J. F. Nail 1 (61-ac), Cyrena McCreary sur, dry abn 2350 ft. **San Augustine**—Superior's Long-Bell 1, S. P. R. R. sur 5, dr 1600 ft. **Sabine**—Hugo Allen's Brooks 1, Isaac Lowe sur, wo 5609 ft. **Shelby**—Redditt & Gray's Pickering Lbr. Co. 2, P. J. Loggins sur, sd 4225 ft. Pundt et al's Pickering 1, W. M. Snider sur, gas blowout 4870 ft, perf csg set on bottom at 5084 ft, at 5050-63 ft, gauged 85 bbls oil, 7 mil gas 24 hours, td 5084 ft.

SOUTH TEXAS

SAN ANTONIO DISTRICT

Bastrop—Brown & Campbell's Bailey 1, Crutchfield sur, sp. Franklins Thaxton & Yarrington 2, Bangs sur, ran 7 in csg last rept, td 2132 ft. **Bexar**—LeComte's Herbst 1, Leal sur, dr 1130 ft. Krumm's Kempf 1, McCulloch sur, dr 350 ft. Naoke's Oppenheimer 1, Miller sur, prep test, td 1005 ft. Priest's McCullough 1, Barrera sur, testing, 1004 ft. Schreiner's McCloskey 1, Desague sur, wocs, 1100 ft, td 6⅞-in csg at 700 ft. Stiles' Scherrer 1, Garza gr, prep ru. Wagner's Lamm 1, sur 3, not yet sp. **Blanco**—Johnson's Glasscock 1, sec 50, dr below 500 ft; taken over by new operators, no details. Nixon's Crist 2, sur 94, dr 80 ft. **Caldwell**—Dudley's Becker 1, Joseph sur, lcn. Nytex' Bridges 1, Floyd sur, co, td 2710 ft, in brkn ch. Stivers' Callihan 1, Roe sur, dr below 1350 ft. **Frio**—Humble's Houston (McLean) 2, sur 161, lcn, woo. Smith's Berry 1, sur 1, testing, td 5110 ft in sd lime. **Guadalupe**—Clark's Anderson 3, sur 11, lcn. Glenn's Appling 1, Hall sur, lcn. Hamill & Hamill's Tewes 1, Duran sur, may abnd, td around 622 ft. King's Rosenbrock 1-A, Duran sur, prep dr out cement plug set on btm, 1882 ft. Robertson's Forsage 1, Cortari sur, dr 1215 ft. **Kendall**—Graham's Werner 1, sur 781, dr 850 ft. Reed's Marquart 1, Traviesso sur, still fsg for strings of tools, td 985 ft. **Kerr**—Hart & Howell's Love 6, Martinez sur, dr and cor, 5665 ft. **Kimble**—Plateau's Bolt 1, sur 42, sd 1863 ft; Davis 1, sur 44, sd for repairs, td 1210 ft; Hunger 1, sur 43, dr 1970 ft. **Lee**—Pederson's Brown 1, Hudson sur, wocs, td 6410 ft, set csg at 6378 ft. **Maverick**—Humble & Wellington's Indio 2, Antonio Rivas gr, sd 1102 ft. **Medina**—Cromwell's Tondrie 1, Rogers sur, prep test above td of 1336 ft. G. G. G.'s Saathoff 1, sur 844, prep abnd. 1303 ft. **Real**—Hart & Howell's Love 1, HE&WT sur, dr below 200 ft. **Travis**—Grimes' Pearson 1 (hole 2), Kimbro sur, dr 500 ft. Raesz & Featherstone's Jones 1, Hornsby sur, sd wo csg, td 680 ft. Wolter's Morell 1, Kemp sur, dr 630 ft. **Williamson**—Coffield & Taylor's Galler 2, sur 7, dr 900 ft. Smith's Rydell 1, sur 334, dr below sur csg.

LAREDO DISTRICT

Bee—Chapman Minerals' Ablinger 1, Ryan sur, testing through perfs 5858-72 ft. **Duval**—Fansler's Benavides 1, El Mesquite gr, cor 2850 ft. Goldrus' Society of the Faith 1, sur 7, lcn, clearing titles. Magnolia's Duval 1, sec 101, tested sw in snd 690-710 ft, dr below. Miller's Miller 1, Santos Flores gr, was in 4899 ft. O'Hern's Benavides 1, sur 169, cor below 3131 ft, tested sw. S. K. & C.'s Welder 2, sur 103, dr below 2460 ft. **Goliad**—Brock's Dial 1, A. Vasquez sur, dr 4200 ft. Steinberger's Albrecht 1, Hancock sur, testing through perfs 5239-43 ft. **Jim Hogg**—Humble's Bass 3, San Rafael gr, testing, perfs 4728-35 ft; Bass 4, San Rafael gr, mim. Navarro's

Garza 1, Teresa gr, dr 2400 ft. **Karnes**—Karnestex' Yanta 1, Hardaway sur, prep dd below 2778 ft. Suttle's McKinney 1, Navarette sur, dr wtr well. **La Salle**—Lake-Tobian's La Salle 1, Emory sur 988, dr 3460 ft. **Live Oak**—Basom's Withers 7, Cowen Ranch sur, sp. Brown & Dovre's Hewitt 1, Adams sur, sp. **McMullen**—Dovre & Brown's Nueces 1, sur 177, dr 600 ft. Loma's Edrington 1, sec 79, coring for Cole sand last report. Martin's Dalan 1, Cassin sur, lcn. Wilkin's Rhode 1, sec 27, partly ru, laying gas line. **Starr**—Senisa's Salinas 3, Sacatosa gr, dr 1200 ft. Sun's McKinney 3, sur 242, sp; Montalvo 1, sur 240, dr below 800 ft. Transwestern's Dallas 1, sur 226, woo 5025 ft. **Webb**—Dovre, Brown & Taylor's Guerra 1, sec 334, wocs, set csg to complete in Upper Mirando sand 2046-52 ft. Harvey & Henderson's Benavides 2, sur 459, dr below sur csg. Houser & Campbell's Puig 2, Albercas gr, dr below sur csg. Killam's Bruni 3, Albercas gr, prep sp. Richardson's Bruni 1, sur 17, lcn. Superior's Spain 1, sur 17, dr 400 ft. **Zapata**—Martinez' Laurel 1, Borrego gr, fsg for bit, td 1340 ft. Thompson's Ramirez 1, por 18, stdg 2100 ft.

CORPUS CHRISTI DISTRICT

Brooks—Humble's McGill 1, Ygnacios Rivas y la Blanca gr, lcn. **Calhoun**—Hiawatha's Roemer 2, Ogsberry sur, dr below 10,170 ft. **Hidalgo**—Harding's Card 1, Hidalgo Canal Co. subd, testing through perfs, no details, td 7507 ft. Phillips' Flores 1, por 39, testing through perfs 5840-5900 ft, td 9708 ft, pb, td 5950 ft. Y & B's Chapa 1, por 40, sp and sd. **Jackson**—Chapman Minerals' Bennett 1, Garcia sur, dr 5655 ft. Crosby's Broughton 1, Schwind & Mahers subd, completed, wo potential, td 7414 ft. **Jim Wells**—Magnolia's Maun 1, Ignacio de la Pena gr, dr 3882 ft. Shell's Von Blucher 1, Best sur, dr 7620 ft. Transwestern's Seeligson 1, Haldeman subd, dr 4110 ft. **Nueces**—Douglas' Smith 1, CEI& PM sur, dr 4670 ft. Humble's Michalek 1, sec 97, dr 6780 ft. Stanolind's Clark 1, Herrera gr, 6968 ft, drlg. Renwar's Eschberger 1, Herrera gr, lcn. Texas' Little 1, sur 59, dr 7130 ft in sdtr hole, td 7746 ft. Union's Brown 1, Fuentes sur, Agua Dulce area, dr 12,930 ft. **Refugio**—Phillips & Trinity's Paveleck 1, Aldrete gr, ru, prep sp. **San Patricio**—Graham's Moore 1, McCampbell Ranch subd, testing 7112-20 ft, perfs. Richardson's Crews (Mills) 1, McCampbell subd, dr 4250 ft, closed well.

TEXAS GULF COAST

Brazoria—Humble's Masterson 1, Anchor area, Geo. Robinson sur, dr shale 8860 ft. David B. MacDaniel's Roweld 1, sw of Hastings, M. V. O'Donnell sur, dr shale 6381 ft. Grey, Wolf and Mayo's Hughes 1, Fresno area, F. B. Drake sur, dr shale 2716 ft. **Harris**—Carroll Oil Co.'s N. Means 1, Pearland area, T. J. Green sur, abn 7007 ft. C. L. Dobbin's Ridgeview Farms 1, nw of Cypress, I. B. Steele sur, dr shale 6130 ft. Jack Frazier's Carter Investment 1, Highland area, T. Patchings sur, dr shale 4100 ft; same operator's Griffith 1, Mt. Houston prospect, A. Smith sur, testing 4077 ft. **Jefferson**—Humble's McFaddin B-13, Jefferson Coast, in Gulf of Mexico, dr shale 4425 ft. **Montgomery**—Deep South's Foster Lbr. Co. 1, ne of New Caney, P. Bryan sur, abn 6985 ft. J. Smith et al's Scott 1, Dacus area, F. A. Wheeler sur, dr shale 2242 ft. **Orange**—Sun's Lutcher Moore 1, north of Orange, B. Johnston sur, dr shale 8945 ft.

"Practical Oil Geology"

The fifth edition of "Practical Oil Geology," a 466-page book by Dorsey Hager, has been published by McGraw-Hill Book Company, New York City, and is ready for distribution. The author states that since 1926, the date of the fourth edition, there have been developments of importance to petroleum geologists and to all oil men of the nation. Much new material has been added, and a chapter on geophysics and one on paleontology have been included to round out the book. Some of the theories propounded in earlier editions have been changed by new facts.

Chapters include: Petroleum — Its Origin and Accumulation; Chemical Composition of Petroleum; Stratigraphy; Fossils and Their Uses; Structural Geology; Prospecting and Mapping; Selecting Drill-Hole Sights; Factors in Oil Well Drilling; Factors in Oil Production; Water and Its Relationship to Oil; Natural Gas — Natural Gasoline; Oil Shales; Geological Field Methods and Instruments in Use; Geophysics; What the Geologist Has Done for the Oil Business; Appendix; List of Books on Oil and General Geology. Price of the book is $4.00.

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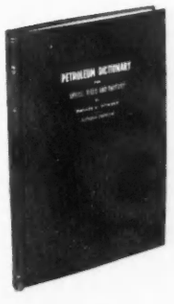

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By HOLLIS P. PORTER

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This book grew out of demands for some source of definitions for terms used by the petroleum industry. The first edition went into the hands of executives, engineers, students of Petroleum Engineering, manufacturers, brokers and advertising agencies. It should be in the library of every one in any way connected with, or interested in the petroleum industry.

253 pages, 330 words and terms defined. Size 6x9. Price postpaid $3.00

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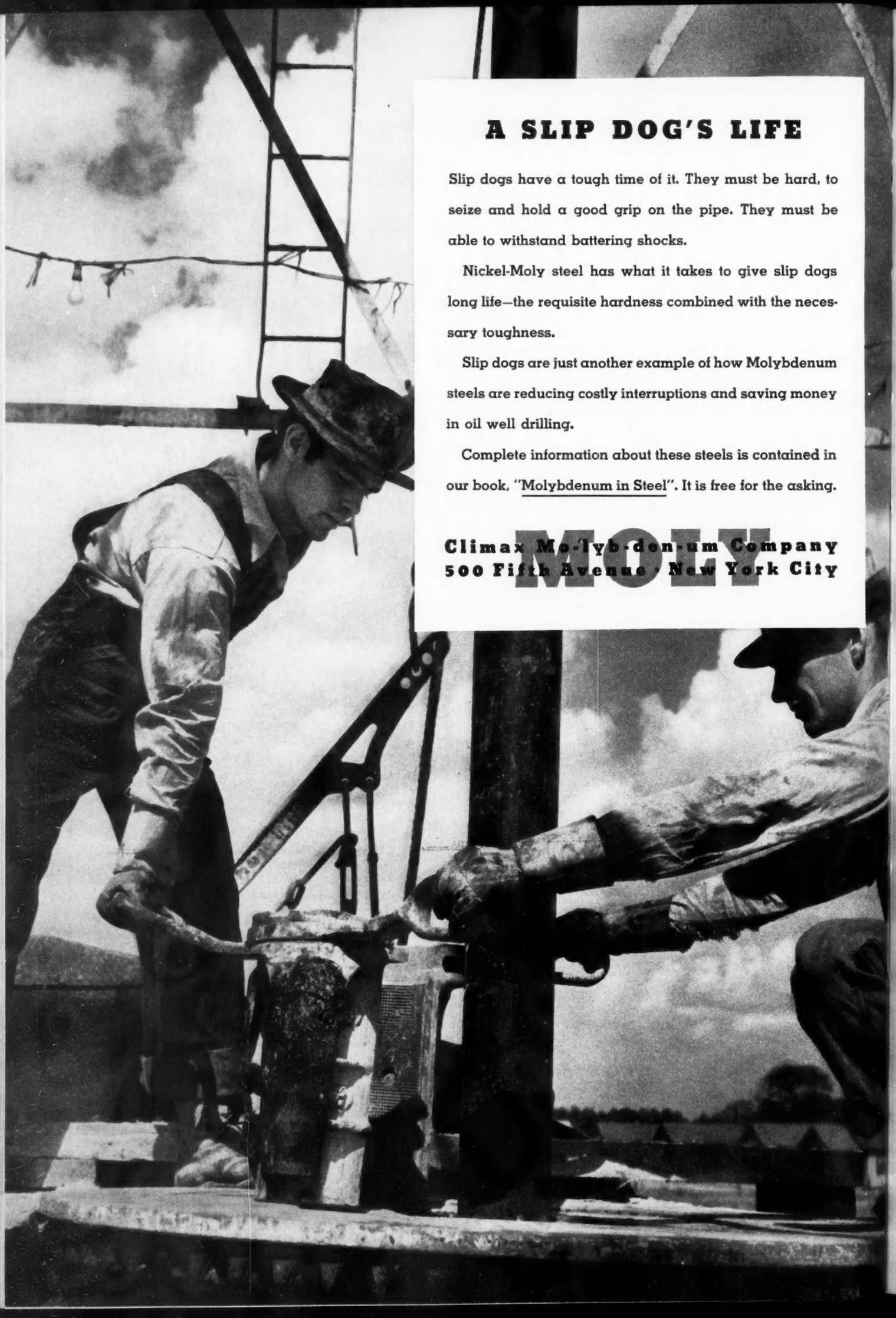

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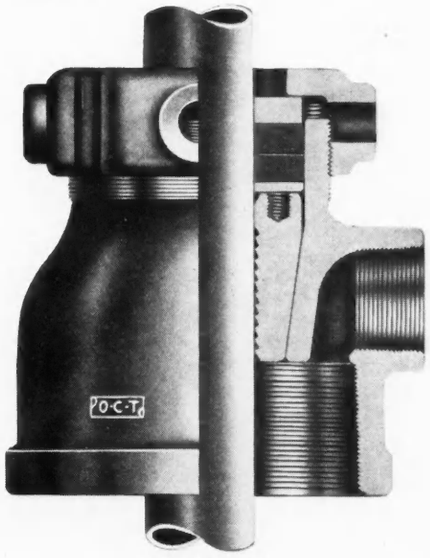


O-C-T T-22

A new tubing head for pumping wells, designated as type "T-22," is now being marketed by Oil Center Tool Company, Houston, Texas.

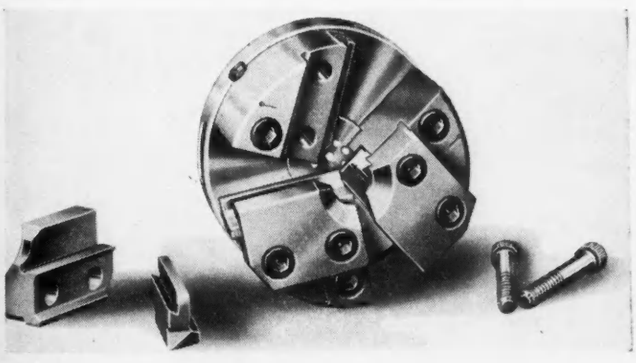
The light-weight, compact design of this new O-C-T head is clearly illustrated in the accompanying sectional drawing. The body and packing nut are of malleable iron, while the slips are of heat-treated chrome-nickel steel. Only one outlet is provided in the body. Two Neoprene rings in the stuffing box above the slips are compressed by making up on the nut on top of the body. The nut is drilled in four positions to accommodate a rod for making up the threaded connection between the nut and body. The Neoprene packing rings, being impervious to oil and gas, will seldom require replacement. The stuffing box holds the slips securely in position in the tapered bowl.

SPECIAL FORMING HEAD
Landis Machine Company

Landis Machine Company, Waynesboro, Pennsylvania, recently designed a special forming head for use on its automatic forming and threading machine.

Heretofore the forming head used on the automatic forming and threading machine merely faced and bevelled or "pointed" the end of the bolt or screw. This special head has two additional functions to perform. In addition to facing and bevelling the end of the work, the cutters which are used in this head are designed to reduce the body diameter of the work and face the shoulder at the end of the cut.

In order to reduce the strain on the head, the cutting load is distributed over three cutters. The cutters are located and securely lodged in the correct cutting position by a setting gauge and a clamping action similar to that which is employed for the company's Tangential Chaser. Provision is also made for the independent adjustment of each cutter holder so that a uniformity of cut is assured for each cutting tool.



Landis special forming head for automatic forming and threading machine.

CUP POINT SET SCREWS
Standard Pressed Steel Company

Standard Pressed Steel Company, Jenkintown, Pennsylvania, has introduced a new cup point screw with knurling all around the points. When turned into place the knurled edges effectively grip the shaft in such a manner that loosening or backing-off is impossible except by the application of a wrench.

Standard cup point set screw.

As there is nothing about these screws that can in any way harm the threads of the tapped holes, it is possible to re-use the same screws in the same holes indefinitely and every time secure an equal degree of effective self-locking protection. A wide range of sizes is available.

PIPE LINE SCRAPER
Tulsa Boiler & Machinery Company

Tulsa Boiler & Machinery Company, Tulsa, Oklahoma, is offering a new pipe line scraper which has been developed to clean particularly long gasoline lines.

After the knife or brush type scraper is first used to clean a bad sediment or corrosion blocked line, the new plug-type scraper will keep the line clean with minimum effort. The scraper consists of a driving section using special composition rubber driving discs flexibly connected to a cleaning head interchangeable to any of the three types. All parts subjected to wear are heat treated to secure maximum life and all parts are made interchangeable whenever possible. Skeleton of the scraper is the same for the 6-inch and 8-inch sizes, and is readily changed from one size to another by changing guide arms, driving discs and brushes or knives. When changing one type scraper to another type it is only necessary to remove one unit and replace the other for scrapers of the same size.

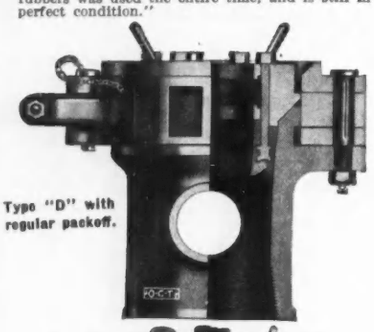
SEAM TESTING SERVICE
American Pipe & Steel Corporation

American Pipe & Steel Corporation, Alhambra, California, has inaugurated a newly developed, accurate seam testing service. It is a vacuum method that can be adapted to locating leaks in the bottoms and desks of tanks, pipe lines etc. and involves a minimum of time and expense.

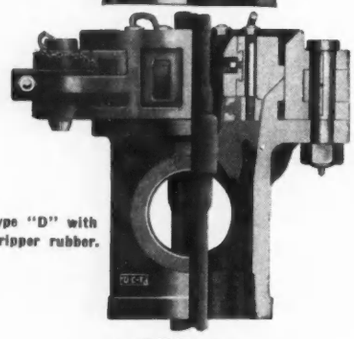
The patented device used in this seam testing service is an air-tight, rectangular-shaped box, equipped with a vacuum gauge. The top of the box is covered with glass and soft rubber strips are mounted around the base. When tests are to be made, a section of the seam is covered with a thick solution of soap suds. The device is placed over the covered area and a strong vacuum is created by means of a suction pump. The tremendous suction compresses the soft rubber base of the device so that air is sealed out. Any imperfections in the seam within the area covered by tester will permit the inflow of air, which in turn will cause large clusters of soap bubbles to appear at that particular point. Detected through the glass top of the seam tester, these bubbles instantly indicate the presence of a leak, no matter how small it may be.

What This Preventer Has Done!

A New Mexico operator writes: "With the aid of your type "D" Preventer we rotated and worked pipe up and down for 16 hours continuously until the well was killed. The same set of packoff rubbers was used the entire time, and is still in perfect condition."



Type "D" with regular packoff.



Type "D" with stripper rubber.

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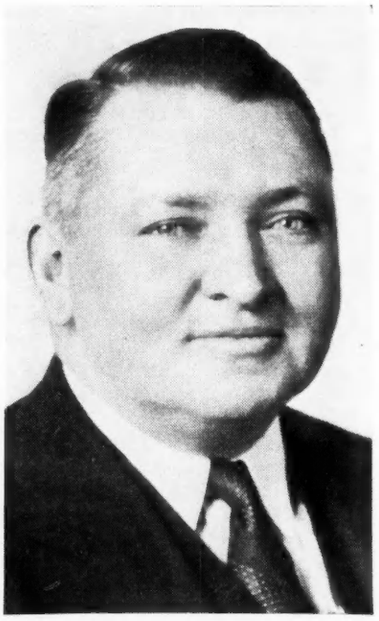
This Week with the Industry's EQUIPMENT SUPPLIERS

John McClain Heads New Chicago Office of Clark Bros.

Clark Bros. Co., Olean, N. Y., announces the opening of a new office in the Peoples Gas Building, Chicago. In charge of this office will be John McClain who will handle Clark engines and compressors in the Chicago area and in the states of Illinois, Indiana and Michigan.

McClain has been associated with the gas and oil business for the past 15 years, in a sales and engineering capacity.



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Brick Elliott Returns From Extended South American Tour

J. E. "Brick" Elliott, president of Elliott Core Drilling Company of Los Angeles, has just returned from an extended trip to South America on business for his company. He made the entire journey by air, flying down the west coast via Guatemala City and Panama to Maracaibo, and later continuing on through Colombia, Eastern Venezuela and Trinidad, returning to California by way of New York.

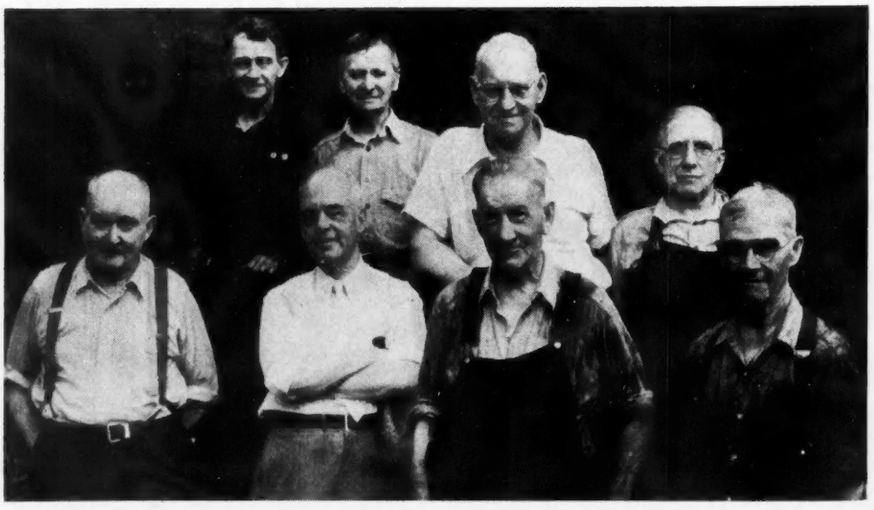
During approximately a four months' tour, Elliott visited every important oil field, and many of the wildcats in Venezuela and Colombia. He states that present activities point to increased drilling operations in all existing fields, with a considerable amount of new development work.

Hazard Oldtimers Have 695 Years of Service

Talk that men past 40 have small chance in today's industry is largely based on the assumption that the elder workers have been abandoned or shunted to the pension rolls before their days of productive labor are over.

A substantial argument in the negative has recently been provided by Hazard Wire Rope Division of American Chain & Cable Company, Inc., Wilkes-Barre, Pennsylvania. This wire rope company comes forward with the statement that its payroll carries the names of 14 employes, each with individual records of from 40 to 67 years of service, these men collectively representing a total of 695 years of continuous employment with one organization.

The accompanying illustration shows 8 of the 14 Hazard old-timers. Left to right in the back row: Philip Henry, 46 years of service; George Hoats, 67; Wally Schuler, 49; Pat O'Toole, 57. Front row: Pete Swinburne, 56; Hugh Murray, 50; Tony Blaum, 49; Bill McCarthy, 45. Not shown in this picture because their duties take them away from Wilkes-Barre are six other Hazard wire rope men: Fred Walters, with a service of 56 years; Benjamin J. Hill, 49; Philip Schumacher, 47; George D. Wicks, 43; Robert A. Stucke, 41, and Fred Vogel, 40.



Hazard Wire Rope Company's Old Timers

Bethlehem Steel Buys Oklahoma Iron and International Supply

Purchase of International Supply Company and Oklahoma Iron Works, affiliated concerns of Tulsa, was completed last week by Bethlehem Supply Corporation, a subsidiary of Bethlehem Steel Corporation. The transaction will result in the manufacture of part of the oil field line of Bethlehem in the Tulsa plant and the enlargement of sales activity through field stores formerly maintained by International Supply Company.

Eugene C. Grace, president of Bethlehem Steel Corporation, spent several days in Tulsa in closing the deal. Other Bethlehem officials in Tulsa were Paul Mackall, Quincy Bent and F. A. Shick, vice presidents, and Wilbur A. Topping, western sales manager, Detroit. Guy A. Tompson, vice president of Bethlehem Supply Corporation, Tulsa, will continue in that capacity.

All activity of the three concerns will be consolidated under the Bethlehem trade name. General offices will be moved to First and Detroit Streets, Tulsa, after the office building of International Supply Company has been altered to suit the new owners. The display store will be moved from East Fourth street to the new address. Present headquarters for oil country activity are now in the National Bank of Tulsa building.

Officials of the Bethlehem concern were hosts at a luncheon in Tulsa where announcement of the deal was made. Grace assured his audience that it was the intention to retain all personnel of the two concerns taken over and that both plant and other personnel would be enlarged as the expansion program is pushed forward.

The deal brings the country's second largest steel concern into the oil equipment field in a major role. Two years ago, Bethlehem Supply Corporation bought Taubman Supply Company of Tulsa. Since then both its equipment line and its sales activity have been enlarged. By taking over a manufacturing plant and gaining additional field stores, the concern will become active with a full line of oil field equipment.

The two concerns taken over in the deal were founded by James R. Sloan in 1907. Following his death they have been under the direction of A. E. Ballin, vice president and general manager. A. F. Bourne was secretary-treasurer. International Supply Company has offices and stores in 22 points in four states: Tulsa was headquarters for Oklahoma with stores there and at Oklahoma City, Seminole, Maud, Wewoka and Ada. Kansas headquarters was at Wichita and Kansas stores were at Chase, Hays, Great Bend, Hutchinson. The Texas office was at Dallas and Texas stores were in Kilgore, Turnertown, Wink, Willow Springs, Odessa, and Kermit, Pampa and Houston. Two stores in New Mexico were at Artesia and Hobbs.

Amercoat Coatings Stocked By Houston Distributor

Robert E. Lanier & Company, Electric Building, Houston, has been appointed distributor in Texas, Oklahoma, Arkansas, Louisiana and Mississippi for Amercoat, cold-applied corrosion-resistant coatings manufactured by American Concrete and Steel Pipe Company of South Gate, California. Amercoat Sales Agency, 5905 Pacific Boulevard, Huntington Park, California, is general distributor for the product.

The new Houston distributor will carry a warehouse stock and sales will be under direction of Everard W. Baker.

Tom Brown Manager Contractors Division of Hercules Powder

Hercules Powder Company announces the appointment of Tom Brown as manager of the contractors' division of the explosives department, succeeding J. J. Kelleher, who resigned November 11. Brown, connected with the explosives industry since 1911, is widely known to the contractors.

Tom Brown became affiliated with Hercules Powder Company in 1929. After a year of sales work in Birmingham, Alabama, district, he went to Chicago where for the past eight years he has served as a representative of the contractors' division. Promotion to manager of the division follows a successful record of sales activities which have given him an intimate knowledge of contractors' requirements.

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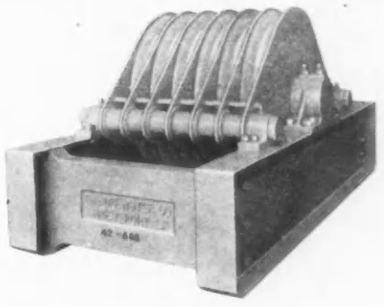

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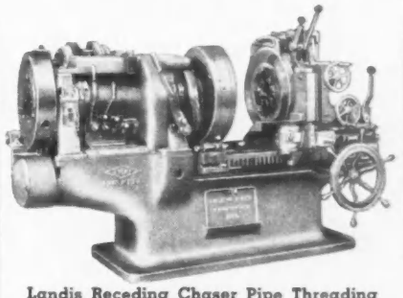

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"Not so good, now. I lost my wife's address."

The Difference

"Pappa, vot is de deefrance from prosperity and depression?"

"Vell, my boy, in prosperity ve had vine, vimmen and song, but in depression all ve got is beer, momma and the radio."

Wit of the Irish

The Irishman's eyes twinkled with mischief as he entered a shop where a notice was displayed saying that nearly everything there was sold by the yard.

"I'll take a yard of milk," he said to the shopman.

Wrinkling his brow for a moment, the shopman dipped his finger in a bowl of milk and drew a line a yard long on the counter. By this time several other persons had come in and all watched the proceedings with keen interest, wondering what Mike would do. Without moving a muscle, he asked the price.

"Five cents," said the shopman, confidently.

"All roight, sor. Roll it up and Oi'll take it."

Wasted Effort

"Ah, how little we know of the future and what it has in store for us."

"That's true."

"Little did I think when some 30 years ago I carved my initials on the desk in the old country school that I would some day grow up and fail to become famous."

Some Still Do

"Why did you leave your last place?"

"Oh, it was so dull. They were trying to live on their income."

His Saving Grace

"I don't like the looks of your husband, Mrs. Brown."

"Neither do I, doctor, but he's good to our children."

Heavy Finance

Englishman (in poker game): "Well, I'll wager a bally pound on this."

American (holding four aces): "I dunno much about your darn English money, but I'll raise you a couple of tons!"

Candid Comment

A lady was entertaining her friend's boy.

"Are you sure you can cut your meat?" she asked, after watching his struggles.

"Oh, yes," he replied, without looking up from his plate. "We often have it as tough as this at home."

What Model?

"Mah bredern, when yo' hears Gabriel sound his horn yo' wants to be ready to jump."

"Mah goodness, are he comin' in an auto?"

Didn't Want to Say Farewell to the Fare

A Scotchman and his wife walked from their farm to the county fair, his wife laden down with a heavy lunch basket. Once arrived at the fair, he considerately turned to her and said:

"You'd better let me carry the basket now, Mary, we might get separated in the crowd."

Wasted Effort

"Mary, did you wash this fish before you baked it?"

"What's the use of washing a fish that has been in the water all his life?"

Following Orders

"You look all out of sorts. What's the matter?"

"Plenty. On account of my rheumatism the doctor told me to avoid all dampness—and you've no idea how silly I feel sitting in an empty bathtub and going over myself with a vacuum cleaner."

Ready for Emergency

"If I'm unable to get home this evening," he said, "I'll send you a note."

"Never mind," his wife replied. "I found it last night in your pocket."

Just a Slight Wait

Missionary—"Am I too late for dinner?"

Cannibal Chief—"I am afraid so, but you'll do for breakfast."

Schemer

Billy—(who has eaten his apple)—"Let's play Adam and Eve."

Small Sister—"How do you play that, Billy?"

Billy—"Well, you tempt me to eat your apple and I'll give in."

But No Pedestrians

"Did you see a pedestrian pass here?"

"No, I've been sittin' here all afternoon and nobody's come by 'ceptin' one solitary man; he was afoot."

Difference

"What's the difference between a sewing machine and a kiss?"

"One sews seams nice and the other seems so nice."

New Job

"I'se got a new job, so I can't do yo' washin' no mo'."

"What is it, Mandy?"

"My new job is dat I can't work. I'se on relief."

Eh! What!

"But, dear, I am late for dinner because I have had my nose to the grindstone all day."

"Well, you had better get a grindstone that doesn't leave face powder, rouge, and lipstick all over you."

Expensive Cleaning Fluid

The newly rich woman was trying to make an impression: "I clean my diamonds with ammonia, my rubies with Bordeaux wine, my emeralds with Danzig brandy, and my sapphires with fresh milk."

"I don't clean mine," said the quiet woman sitting next to her; "when mine get dirty, I just throw them away."

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